

Contact: Rachel Boon

PROFESSIONAL DEVELOPMENT ASSIGNMENT REQUESTS FOR FY 2021

Action Requested: Consider approval of the requests by the Regent universities for professional development assignments for FY 2021.

Executive Summary: The Board of Regents must annually approve faculty professional development assignments as specified in Iowa Code §262.9(14) and Board Policy §2.2.R. For FY 2021, the universities request approval of 134 faculty professional development assignments. A brief description of the work planned for each proposed assignment is available below. This report addresses the Board of Regents Strategic Plan priorities for “promoting and supporting innovation in teaching, research, and economic development and promoting effective use of resources to meet institutional missions.” The Board office recommends approval of the professional development assignment requests for FY2021.

**NUMBER OF PDA RECIPIENTS AND PERCENT OF TOTAL FACULTY
FY 2017 – FY 2021**

	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021
SUI	53 (2.3%)	65 (2.8%)	56 (2.4%)	71 (3.0%)	72 (2.2%)
ISU	31 (1.6%)	42 (2.1%)	43 (2.2%)	50 (2.7%)	48 (2.6%)
UNI	16 (2.0%)	15 (1.9%)	12 (1.7%)	14 (1.8%)	14 (1.9%)
REGENT TOTAL	100 (2.0%)	122 (2.4%)	111 (2.2%)	135 (2.7%)	134 (2.3%)

Background:

Institutional policies. Each university has academic policies that describe the process and requirements for professional development assignments (PDA) and which guide the selection of faculty proposed for PDA.

- **University of Iowa.** Full-time faculty members (i.e., tenure or clinical-track) with nine-month appointments who have completed a minimum of 10 semesters of full-time academic service are eligible for an initial one-semester PDA. Twelve-month faculty members are eligible for their first PDA after they have completed a minimum of four years of full-time academic service (prorated for part-time faculty). Twelve-month faculty members who have completed eight to 11 years of full-time academic service (prorated for part-time faculty) are eligible for a PDA of two semesters or a full 12 months, respectively. For a subsequent award, faculty members with nine-month appointments must complete 10 semesters of full-time service; faculty members with a 12-month appointment must complete four years of full-time service.
- **Iowa State University.** All members of the faculty employed half-time or more are eligible to apply for a PDA. There is no restriction on length of service to qualify; however, priority may be given to tenured faculty over adjunct and non-tenured faculty, and to persons who have not received a PDA in the past five years.
- **University of Northern Iowa.** Policies and procedures relating to PDA at UNI are defined in the Faculty Handbook. A recipient of a PDA is ineligible for a subsequent assignment during the three years following an award.

Review process. The three universities conduct a rigorous review process for each proposed PDA. Peer review and recommendation are the basis of selection at the department and college levels at each university and final approval by the provost. Criteria considered include the impact of the proposed PDA on the institution and the state.

Length of assignments. Professional development assignments are usually for one semester, although they may be up to a year. For PDA that are two semesters in length, compensation is limited to the amount of compensation a faculty member would receive during a semester-long assignment. Salary savings generated from faculty members on assignment for a full year offset the replacement costs for other faculty members.

Obligation to institution. Iowa Code §262.9(14) requires that a faculty member return to the institution for twice the length of time of the professional development assignment or to repay the costs associated with the PDA if the faculty member does not return to the institution. Following a PDA, faculty members are responsible for reporting the results of their assignments as specified by Board Policy 2.1.4.R. and institutional guidelines.

Value of professional development assignments. The PDA provide increased visibility and prominence of faculty and departments in research and scholarship and direct application of expanded knowledge to students, Iowans, the nation, and the world. Recipients often compete successfully for external grants that benefit the professors, programs, the universities and the state by generating revenue for core university activities.

Proposed activities. Faculty members engage in a variety of productive activities during their PDA. For example, faculty members perform intensive research, write scholarly books and articles, create new works of art and composition, present papers, work in industry, prepare grant proposals, mentor graduate students, and develop modeling systems, software, course materials and multimedia resources for their discipline. These opportunities enrich the educational environment of the universities and are essential to the academic vitality of the universities.

Faculty replacement costs.

- At SUI, the total projected cost of the program for FY2021 is \$256,949. For the recommended awards, costs will be reduced, where possible, by having colleagues cover courses or deferring non-required courses to a later time.
- To the extent possible, ISU department chairs and deans provide flexible approaches to managing the workload and associated costs for the assignments, including reassignment or alternate scheduling of courses. Some PDA requests do not represent new costs because the department reassigns course load among current faculty. Salary savings generated from faculty members on assignment for a full year are used to offset the replacement costs for other faculty members. FY2021 costs, net of salary savings, are \$96,102 (\$638,500 in estimated costs minus \$542,398 in salary savings).
- At UNI, replacement funds are the responsibility of the colleges and departments of the PDA recipients; no central funds are provided. The FY2021 costs, net of salary savings, total approximately \$47,887 (\$178,551 minus \$130,644 in salary savings). Past reports (FY 16-20) did not include UNI's salary savings. In some cases departments expect to increase class size or to curtail course offerings to cover the faculty members' reduced course load while on PDA. Some departments expect to hire adjuncts so that courses necessary for students to continue to make academic progress can continue to be offered.

**BUDGETED REPLACEMENT NET COSTS
FY 2019 – FY 2021**

	FY 2019	FY2020	FY2021
SUI	\$211,256	\$205,300	**\$256,949
ISU	\$116,045	*\$36,649	*\$96,102
UNI	\$255,000	\$220,050	*\$47,887
REGENT TOTAL	\$582,301	\$461,999	\$400,938

*Change in calculation of costs to reflect net costs (estimated costs minus salary savings)

**SUI does not have any full-year, full-time PDA requests for this year, so none of the current requests generate salary savings.

THE UNIVERSITY OF IOWA

BAALRUD, SCOTT D, Associate Professor, Physics & Astronomy, 7 years of service, Fall 2020
Title: Strongly Coupled Plasma Physics Textbook

Recent research has revealed states of plasma with properties more akin to ionized liquids or solids. These are called “strongly coupled plasmas” because their basic properties are determined by the strong direct forces between atoms, rather than the kinetic energy of the atoms. Strongly coupled plasmas are found in nature, including the interior of giant planets and the core of stars. They are also produced in a multitude of laboratory experiments and are important in national security applications. In 2017, Professor Baalrud introduced a graduate physics course, “PHYS:7731 Physics of Strongly Coupled Plasmas,” that introduces students to the recent discoveries and methods of this burgeoning discipline. In this PDA, he intends to write a book based on his lecture notes from this course. This will directly benefit UI students who take this course in the future, and whose graduate research is directed in this field. It will benefit society generally by contributing to advancing an active research field that deepens our understanding of nature, and which is leading to new technologies.

BECK, MARGARET, Associate Professor, Anthropology, 12 years of service, Fall 2020
Title: Making Sacred Things: Red Pottery and Pipestone in Native North America

By the 19th century, Native American communities all over the eastern U.S. used red pipestone from Minnesota for calumet pipes. Professor Beck’s project addresses sacred use of red pipestone in the northeastern Plains a century before the earliest evidence of the calumet ceremony, exploring connections between red pipestone and red-slipped ceramics in the AD 1050-1200 period to shed light on pipestone’s evolving ritual purposes. The results of the PDA will include drafts of several journal articles and a grant proposal to the National Science Foundation to expand this project, as well as new material for several undergraduate courses.

BECKERMANN, CHRISTOPH, Professor, Mechanical Engineer, 32 years of service, Fall 2020
Title: Modeling of Solidification

Metal casting is an industry that is worth hundreds of billions of dollars in the U.S. alone. Understanding solidification of metal castings is crucial for controlling the microstructure and properties of cast metals and the formation of defects in solidified materials. During the PDA, Professor Beckermann will complete a book on mathematical modeling and computer simulation of solidification of metal alloys. The book will be based on the more than 30 years of research that he and others have performed in this area. Over the past 10 years, Professor Beckermann wrote the first part of this book, covering the fundamentals and governing equations. During the PDA, he will complete the book by adding chapters on applications and specific examples. The book is expected to form a primary reference for researchers in the field of solidification modeling. The new material will be particularly useful for practicing engineers in the casting industry.

BHANDARY, ASHA L, Associate Professor, Philosophy, 7 years of service, half time for calendar year 2021
Title: Being at Home: Cultural Conflict, Status Hierarchies, and the Possibility of Equality

Professor Bhandary will be writing a book titled “Being at Home.” In this new work of political philosophy, which spans multicultural political theory, psychology, public health, feminist theory and critical race theory, she will argue that the value of feeling at home in the world has been overlooked by theories of justice. Drawing upon studies from psychology and public health to show that stress is damaging to individual health, she will argue that the need to feel at home can

illuminate sources of cultural conflict, that it is at stake in instances of microaggressions, and that it is implicated in resistance to feminist change. During the fellowship, she will produce a complete manuscript and present her work in national philosophical venues and local venues. In addition, she will incorporate her findings into her courses Multiculturalism and Toleration PHIL 3342, Bioethics PHIL 2415, Feminist Ethics PHIL 2242, graduate and undergraduate seminars and thesis supervision. Ultimately, her research will promote lowans' well-being by establishing the need for plural and variegated cultural spaces, so that every person can have regular access to spaces in which they feel at home.

BIANCHI, ALISON J, Associate Professor, Sociology and Criminology, 12 years of service, Fall 2020

Title: Sentiments as Status Processes: An Expectation States Approach

Sociologists have produced theory-driven research concerning how task group structures foster or hinder actors' opportunities to contribute to their groups' goals. Scholars have generated theories about how sentiments, the liking and disliking relations among group members, organize groups. They have also theorized about social status, the group relations based on respect and deference. What group processes researchers have not yet done is to develop a unified theory that includes both sentiment and status processes. Using funding from the National Science Foundation, Dr. Bianchi will conduct a social psychological experiment that tests a new hybrid theory of sentiments and status. Along with multiple publications, this project will promote the training of the next generation of group processes scholars by engaging graduate students in studies at The Center for the Study of Group Processes. Social psychological findings will also be shared in Dr. Bianchi's undergraduate and graduate-level courses. Although the project is basic science, it has direct applicability to all project teams to help create more efficient and cohesive task groups.

BORK, ROBERT, Professor, Art and Art History, 21 years of service, Fall 2020

Title: Geometrical Design Principles in Art:Case Studies from Gothic Architecture and Premodern Painting

For the past two decades, Professor Bork has studied the geometry of Gothic cathedrals, whose builders combined simple figures such as squares, circles, and triangles to create final forms of great complexity and sophistication. More recently, he has begun to explore the surprisingly similar geometries that governed the composition of late medieval and Renaissance panel paintings, which have to date received only scant scholarly attention. Bork currently seeks to extend his work on these closely related topics by pursuing three complementary initiatives. First, he will complete his geometrical analyses of the cathedrals of Reims and Metz, based on data from 3-D laser surveys that he directed in the summer of 2018. Second, he will contextualize his innovative analyses of paintings by digging deeper into the literature on painters' workshop practices, building on work he undertook with his graduate seminar in the fall of 2018. Third, he will begin to present this work to the public through a website that he is currently developing in collaboration with the UI Digital Scholarship and Publishing Studio, setting the stage for future book projects on geometry in the arts.

BOWMAN, NICHOLAS A, Professor, Education Policy & Leadership Studies, 4 years of service, Fall 2020

Title: A Large-Scale Approach for Improving College Student Success and Equity

Professor Bowman's research will examine the impact of an online activity that is designed to promote college students' belonging, academic achievement, retention, and graduation. This study will focus on students who plan to major in science, technology, engineering and

mathematics (STEM), since STEM graduates are in high demand, but many students do not persist in STEM majors. Previous research suggests that this type of activity is often more effective for students from underrepresented groups, so this work will explore possible differences by students' race, sex, social class, native language and disability status. This project is expected to result in various journal articles, and the findings could gain national attention. This research will be incorporated into Bowman's teaching, and a graduate student will be heavily involved. If this activity is indeed successful in promoting college student success and equity, then it could be administered to all incoming students at colleges and universities in Iowa and beyond.

BRUHN, ALLISON L, Associate Professor, Teaching & Learning, 8 years of service, Fall 2020
Title: Answering the Call for Research on Data-Based Decision Making for Behavior

The purpose of this PDA is to answer this call by conducting research that will generate new information that has the potential to improve how teachers use data to make decisions about students' behavior in K-12 classrooms. Dr. Bruhn will statistically analyze observational data of students' behavior to determine the reliability of the data and how student characteristics and classroom activities affect the accuracy of observations. Project activities include, but are not limited to, cleaning extant data sets (from a current randomized control trial) on 72 teacher/student pairs across two project sites (Iowa City, IA and Nashville, TN), reading and reviewing research using the proposed statistical procedures, learning a new statistical software program, analyzing data and reporting results. Results of this project will provide estimates on the accuracy of behavioral observations, indicate the number of observers and sessions needed for reliable observations based on individual student profiles (e.g., disability, race) and contextual variables (e.g., classroom instructional activity), and inform the design of future studies.

BUCKLEY, JENNIFER A, Associate Professor, English, 6 years of service, Fall 2020
Title: Act Without Words: Speechless Performance on Modern Stages

Professor Buckley will write two chapters of her second monograph, "Act Without Words: Speechless Performance on Modern Stages." These chapters will present new scholarship on two of the most important playwrights of their respective eras: Samuel Beckett (1906-1989), and Young Jean Lee (b. 1974). Beckett is arguably the last great European Modernist writer, and Lee is among the most discussed (and widely taught) playwrights of her generation. This new scholarship will greatly enhance the teaching of these playwrights' works. The chapter on Beckett illuminates five of his least-understood plays (written 1956-82), while study of Lee's "Untitled Feminist Show" (2012) contributes to a new, but fast-growing, scholarly and public conversation about her theatre company's exciting and uniquely challenging practice. Like the rest of the book, chapters on Beckett and Lee will reveal how writers, performers, and audiences treat movement a primary form of communication -- one that is at least as powerful as speech.

CARGILL, ROBERT R, Associate Professor, Classics, 8 years of service, Fall 2020
Title: "Missing Messiah" in Israel 2020

As part of his PDA, Professor Cargill will relocate to Israel. While there, he will engage in a number of research activities, including the finalization of his current Oxford University Press manuscript, "The Reception History of Melchizedek," as well the completion of the draft of his next OUP manuscript, "The Missing Messiah," which deals with the concept of binary or dual Messianism—the expectation of not one, but two messianic figures—in Second Temple period Judaism. He will also study Modern Hebrew in an immersive program and tour archaeological sites creating a photo and video database for use in classroom and public lectures, as well for use in the popular magazine he edits, "Biblical Archaeology Review."

CARR, LUCAS, Associate Professor, Health & Human Physiology, 7 years of service, Fall 2020
Title: Improving Physical Activity Behavior Among At-risk Populations

Physical inactivity is a risk factor for many chronic diseases, yet fewer than 25% of U.S. adults meet the physical activity guidelines. There is a need for effective physical activity interventions and this is the focus of Professor Carr's research. He is currently leading two funded pilot interventions in this area: 1) the MapTrek study is funded by the UI Clinical and Translational Institute and targets older adults in retirement communities; and 2) the AYA active study which is funded by the UI Holden Comprehensive Cancer Center and targets adolescent and young adult (AYA) cancer survivors. The long-term goal for each of these pilot projects is to use the data to support competitive grant applications. For the proposed PDA, he will submit two manuscripts and two external grant proposals. This work has implications for advancing our understanding on how to advance the health of Iowans living with chronic diseases. This PDA will also contribute Professor Carr's teaching as he directs courses on physical activity behavior change and obesity.

CHEN, SHUANG, Associate Professor, History, 9 years of service, Fall 2020
Title: Redefining Property Rights in Manchuria, 1880s-1920s

In this project, Professor Chen examines the social and political consequences of the privatization of state land in Manchuria by the Qing state. Between the 1880s and 1906, in face of competitions with the Russian and Japanese empires, the Qing sold all the state land in Manchuria to private owners, which marked an important passage in China's transition from empire to nation-state. However, scholars have long overlooked this reform. In the study, Professor Chen applies a mixture of qualitative and quantitative methods to archival sources and large-scale demographic and property datasets. The study will contribute an in-depth understanding of the institution of property rights in the context of state ownership. This project is expected to result in several journal articles and a monograph. It will also produce new materials for graduate and undergraduate courses. Moreover, this study will enrich the understanding of the economic system of China and its people's economic behaviors.

CONSTANTINESCU, SERBAN G, Professor, Civil-Environmental Engineer, 16 years of service, Spring 2021
Title: Eco-Hydraulics of River Streams: An Integrated Numerical and Experimental Approach

Natural rivers are highly dynamic environments whose structure and function are controlled by interactions of physical and biological processes. Professor Constantinescu will conduct research aiming at understanding and quantitatively describing the hydrodynamics, morphodynamics and transport processes in fluvial systems and their relevance for river ecology. The focus will be on studying flow-plant interactions and erosion mechanisms in streams containing patches of vegetation, mixing at river confluences and hydrodynamics of streams containing mussel beds. The PDA will allow joint research on these topics with experimentalists and river ecologists from two leading research institutes. The research will result in journal articles, training of a graduate student and submission of grant proposals focusing on the eco-hydraulics of vegetated streams and freshwater mussels and on flow stratification effects and mixing at river confluences. Research results will be used in the material covered in several graduate courses and to educate students about the importance of sustainable use of rivers and preserving their biodiversity.

CURTU, RODICA, Associate Professor, Mathematics, 12 years of service, Fall 2020
Title: Neural-Inspired Models of Auditory Category Learning

Categorization, the ability of a brain to treat distinct stimuli similarly, plays a critical role in auditory and speech perception. Computational models for various cognitive mechanisms of auditory

categorization have focused in the past on neural processes associated with either supervised or the unsupervised learning. In this project Professor Curtu will develop, simulate and analyze a mechanistic neural-plausible model of auditory categorization that accounts for both forms of learning and that aims to emulate the process of first language acquisition. The project and its continuation are expected to produce several journal articles, a National Science Foundation grant and new material for undergraduate and graduate courses. It has the potential to reveal fundamental mechanistic properties of auditory categorization and to advance our understanding of health impairments such as dyslexia or developmental language disability in children.

D'AGATA, JOHN-PHILIP, Professor, English, 14 years of service, Fall 2020

Title: Translating Plutarch's Letter of Love

Professor D'Agata will write a book about Plutarch. Best known as a writer of biographies, Plutarch lived in 1st century CE in Greece. Around the year 90, Plutarch was traveling when he received a message that his two year-old daughter had died. Despite being only 50 miles away, Plutarch decided not to return home but instead to send a letter of consolation to his wife. His letter has since become one of the most famous in history, but it has also raised a question: Why did Plutarch not return home to be with his wife? By exploring the history of consolation letters, Plutarch's personal life, ancient Greek attitudes toward death and children, and the author's own questionable choices as an artist throughout his life, Professor D'Agata's book will ask: Why do artists sometimes choose to be cruel to the people who are in their lives in order to make art for strangers? A PDA will allow Professor D'Agata to complete his eighth book and further contribute to the field of creative nonfiction, which is what he teaches at UI as the director of the nation's top-ranked nonfiction writing program. He will also incorporate his new knowledge into his undergraduate and graduate writing courses.

DASGUPTA, SOURA, Professor, Electrical-Computer Engineer, 30 years of service, Spring 2021

Title: Control and Machine Learning Algorithms for Parkinson's Disease

Professor Dasgupta will develop machine language algorithms for diagnosing Parkinson's disease (PD) from EEG data and adaptive control algorithms for Adaptive Deep Brain Stimulation (ADBS) for alleviating PD symptoms. About 0.3% suffer from PD as do 3% over 80. By 2030, the number of PD patients over 50 years of age is expected to double from what it was in 2005. Many veterans who were exposed to Agent Orange also suffer from PD. Current diagnostic tools like DAT-scan are very expensive (\$10,000 cost to patients) and are sensitive to medications. Together with Professor Narayanan in Neurology, Dasgupta has developed a preliminary algorithm that diagnoses PD from just five minutes of EEG data. Part of the PDA will be used to develop further this algorithm. Furthermore, working with Professor Narayanan, he will develop adaptive control algorithms that provide stimulation to ameliorate PD symptoms at onset. The benefits to society is immense. Three to five papers and proposals to external funding agencies will ensue. The results will be used in a Machine Learning course he will develop and in his adaptive control course.

DUTTA, ANIRUDDHA, Associate Professor, Gender, Women's, & Sexuality Studies, 6 years of service, Spring 2021

Title: Travails in the Hinterland: Lagan, Gender and Caste in North India

Professor Dutta will examine the cultural practice of lagan, in which transgender people dance in weddings and festivals in North India, to understand changing intersections of gender, caste and transnational capitalism in South Asia. In lagan, trans dancers from Dalit (low caste) backgrounds dance for 10-12 hours daily, earning more than from other work, but also facing exploitation and

sexual abuse. Yet Dutta's preliminary interviews with dancers suggest they are not just victims - they use new openings in changing rural economies to gain upward mobility. Dutta will conduct ethnographic fieldwork with lagan dancers to understand how globalization and capitalism is changing rural Indian economy to create both limited opportunities for LGBT people and new forms of exploitation based on caste, gender and sexuality. This research will help us better understand intersections between capitalism and caste/gender and between global and local economies, creating knowledge that could help address social inequality across global and local scales. The study is expected to yield several journal articles and material for Dutta's undergraduate course.

ERIVES, ALBERT J, Associate Professor, Biology, 7 years of service, Spring 2021
Title: Establishing the Tribolium System to Study Hearing-related Genes

The purpose of this PDA is to establish a more powerful animal model to study new hearing-related genes identified by Professor Erives. He will pioneer the Tribolium flour beetle and its antennal hearing organ as an experimental model, which, encodes counterparts to all human trans-membrane channel (TMC) proteins. Tribolium is an emerging powerhouse system with a sequenced genome and established protocols for rearing the beetles and conducting robust RNA interference, necessary for efficient testing of gene function. Professor Erives will conduct key experiments to address the function of two TMC gene subfamilies of unknown function that are expressed in both human auditory hair cells and most insect antennae but are absent in *Drosophila* and its reduced antenna. This work will produce results relevant to teaching in Cell Biology and Neurobiology, data for future research grants, and new understanding of the function of all TMC proteins with relevance to age-related hearing-loss suffered by many Iowans.

FANG, HAO, Associate Professor, Mathematics, 14 years of service, Spring 2021
Title: Stability in conformal geometry

Conformal geometry is a branch of mathematics that studies shapes of objects while allowing angle preserving transformations. For example, near blackholes the space-time of our universe may be bent in such a fashion. Thus, to understand the behavior of the universe near its singular spots, (i.e., blackholes), we would like to get as much geometric information as possible from limited observable data. Conformal geometry is closely related to other branches of mathematics and physics. Professor Fang has been working on conformal geometry on singular surfaces in his recent works. He will continue his research on singular 4 and higher dimensional objects, which involves sophisticated non-linear techniques. He will develop necessary analytical tools to examine these new models and explore applications in geometry and physics. Fang intends to visit Princeton, Notre Dame and Rome for research trips. He will also give lectures and talks in conference. The results from this research will be presented in a graduate topic class and used as undergrad course teaching materials. He currently is advising two graduate students, who will be involved in this project.

FASSLER, JAN S, Professor, Biology, 32 years of service, Fall 2020
Title: Integrating Data Science/Analytics, the Skills to Handle "Big Data", Into Our Research and Existing Bioinformatics Curricula at the University of Iowa

Data science or data analytics are general terms for mining and deriving patterns or other types of predictive insights from massive amounts of stored data. This discipline is really a sophisticated set of tools with many different applications including marketing, weather forecasting, travel, insurance, healthcare and biology. During this PDA, Professor Fassler will be trained in genomic data science methods while simultaneously using data analytics tools to mine large datasets to be generated as part of her ongoing research effort. In addition, an existing dual-level Introductory

Bioinformatics course will be updated with a data science emphasis that is currently lacking. The goal of both research and teaching updates is to ensure that research programs and teaching efforts at the University of Iowa take advantage of/provide high value skill sets pertaining to the emerging field of “Big Data.” The revamped course will be launched in Fall 2021 and will complement the new computer- and statistics-heavy data science majors at Iowa State University and at the University of Iowa with a biological and biomedically centered counterpart.

FOX, CLAIRE F, Professor, English, 18 years of service, half time for calendar year 2021
Title: Contemporary Art and Heritage Placemaking in the Americas

Professor Fox will use her PDA to advance research on cultural policy, the visual arts and heritage placemaking in the Americas. She will produce an article for publication in a scholarly journal and conduct research in Perú and Suriname, locations that figure into her ongoing project. She will revise two syllabi and design a new course on creativity and the cultural economy. She will identify grants that will enable her to complete the remaining site-based research for her project. The proposed research will advance her scholarly profile in the fields of Literature and Culture of the Americas and Latinx Studies, and in turn, those of the English department and the university.

FRISVOLD, DAVID E, Associate Professor, Economics, 6 years of service, Fall 2020
Title: Understanding the Influence of Calorie Posting on Restaurant Purchases

Consuming meals in restaurants is linked to the rise in obesity, and consumers have difficulty in accurately determining the nutritional content and number of calories of menu items. As a result, the Affordable Care Act (ACA) requires chain restaurants to post calorie information on menus and menu boards. Prof. Frisvold’s project will determine the impact of this information on the purchases and the amount of calories that they contain by consumers in fast-food restaurants. He will incorporate his findings into his undergraduate course, Health Economics. This project will also inform policymakers as to whether the calorie posting mandate in the ACA influences the amount of calories purchased and has the potential to impact obesity rates.

FU, HAI, Associate Professor, Physics and Astronomy, 6 years of service, Spring 2021
Title: Dating Galaxy Mergers with Dynamical Models

With this PDA, Professor Fu will develop a method to apply a new dynamical modeling tool on a large sample of merging galaxies. By matching simulation data with new integral-field spectroscopic observations, the method will be able to recover the collision geometry, date the observed epoch, and predict the future coalesce for hundreds of merging galaxies. The proposed activity will occur at the University of Hawaii (UH), Manoa, hosted by Professor Barnes. The UH is a hub of astronomical research, due to the institute's pioneering role in building world-class observatories on Mauna Kea. Barnes is a leading theorist in simulations and dynamical modeling of merging galaxies. The success of the project requires both the observational expertise of Fu and the theoretical expertise of Barnes. The team will write a peer-reviewed article describing the method and summarizing the initial results, report the findings at conferences, and give public talks in outreach events.

GILOTTI, JANE A, Professor, Earth & Environmental Sciences, 20 years of service, half time for academic year 2020-21
Title: Using Age Proxies to Determine the Size of the Ultrahigh-pressure Terrane in the Greenland Caledonides

Professor Gilotti will use her PDA to collaborate with Dr. Karolina Kosminska at the AGH University of Science and Technology in Krakow, Poland. The main goal is to initiate a project

using isotopic dating techniques on Professor Gilotti's existing sample collection to obtain ages that can distinguish between high-pressure and ultrahigh-pressure metamorphism in NE Greenland, and thus delineate the size of the UHP terrane. UHP metamorphism is currently documented on a small island but establishing its aerial extent has huge implications for tectonic models of continent-continent collision. Gilotti will produce an NSF proposal, write a paper on high-pressure metamorphism in the ancient Caledonian mountain belt that includes Greenland, Scandinavia and Svalbard, as well as work with Kosminska on the Greenland rocks. The PDA will build an international collaboration that will involve future University of Iowa students, and provide new course material for a graduate seminar, and upper level undergraduate courses.

GLEASON, CRISTI A, Professor, Accounting, 15 years of service, Spring 2021

Title: Decision Usefulness of U.S. Versus International Accounting Standards

Despite efforts to harmonize U.S. and international accounting standards, significant differences persist. In 2007, the Securities and Exchange Commission permitted foreign firms to file their financial statements using International Financial Reporting Standards (IFRS). However, little research has examined differences between the standards and their impact on financial reporting quality. During the proposed PDA, Professor Gleason will work with colleagues at the University of Texas-Austin and the University of Münster on two projects examining the decision usefulness of U.S. standards that differ meaningfully from IFRS. Study 1 will examine differences in quarterly financial reporting standards. Study 2 will examine differences in SEC financial statement reviews, where IFRS requires significantly fewer disclosures. Gleason will publish the research at conferences and in widely read journals and incorporate them into her undergraduate and MBA-level courses. The studies will also be shared with the Financial Accounting Standards Board and the Division of Corporate Finance of the Securities and Exchange Commission.

GOMPPER, DAVID K, Professor, Music, 28 years of service, Fall 2020

Title: Piano Concerto

Professor Gompper will compose a concerto for piano and chamber orchestra for the Center for New Music during its 2021-2022 season. The concerto is the sixth in a series of concerti composed since 2009, and the work will be a capstone to a decade-long investigation of this genre. Composition students will benefit when the activities of their instructors serve as role models for the profession. And while the audience will not only take note of a performance of a new composition, they will also bear witness to the collaborative effort between composer and musicians in the on-going creation of music. The Center for New Music within the School of Music has been nationally recognized for its support of contemporary music since 1966, and it is considered a leader in this field.

GREEN, STEVEN H, Professor, Biology, 32 years of service, Fall 2020

Title: Neuroimmune Interactions During Neurodegeneration in the Cochlea

The neurons of the cochlea (termed "spiral ganglion neurons," SGNs) transmit auditory sensation from the sensory cells ("hair cells") of the ear to the brain. Loss of the hair cells results in deafness and can also result in degeneration of the SGNs. Cochlear implants restore hearing in deaf individuals by directly stimulating SGNs but their effectiveness may be limited by SGN degeneration. Moreover, SGNs themselves may be directly affected by noise, aging and other insults and degenerate even with hair cells intact, resulting in hearing impairment. Professor Green will use this PDA to test a novel hypothesis to explain and prevent the degeneration of SGNs after deafening or other trauma: that SGN death is due to immune/inflammatory response in the cochlea. Professor Green will perform studies in rat and mouse systems using genetic and

other techniques. This could lead to new treatments to prevent neurodegeneration in the ear and in the brain. Graduate and undergraduate students will work on this research.

GUO, MAN, Associate Professor, Social Work, 8 years of service, Spring 2021

Title: Immigration, Aging, and Cognitive Function: A Bi-country Study of Cognitive Function of Older Adults in China and United States

To date, it remains largely unknown how immigration affects individuals' cognitive function, and its long-term impact in later life when the risk of cognitive impairment increases. Professor Guo will use cross-country comparative data from three large representative surveys in China and United States to systematically compare cognitive well-being and its determinants among: 1) Chinese older adults in China (CHARLS), 2) Chinese older immigrants in the US (PINE), and 3) non-immigrant older adults in the United States (HRS). The project is expected to result in several journal articles and new materials for her undergraduate courses. The project will also lay important groundwork for justification and feasibility of Guo's future grant on cognitive health of older immigrants. Overall, this project will contribute important scientific and practical knowledge to enhance successful aging of the rapidly increasing immigrant population in the United States.

HARKNESS, SARAH K, Associate Professor, Sociology & Criminology, 8 years of service, Spring 2021

Title: Gendered Negotiations: How Gender Stereotypes Affect Negotiation Outcomes and Trust Building

Professor Harkness will examine how gender affects bargaining outcomes. While prior literature has noted a gap in negotiation outcomes between women and men, little is known about the cause of this gap and when men and women may be more or less disadvantaged. This research will apply a newly-designed experimental protocol to more accurately capture negotiation in ongoing relationships. The project may help us to both better understand negotiation relationships and how gender may or may not lead to different bargaining outcomes. This project is expected to result in several conference presentations, journal articles and a grant from the NSF. Further, this work will help design better ways to teach people how to negotiate in their own lives and will provide material for Professor Harkness to design a new undergraduate course on the topic.

HAVENS, TIMOTHY J, Professor, Communication Studies, 16 years of service, half time for academic year 2020-21

Title: Television Gets Smart

Professor Havens will use a PDA to: (a) complete a draft of a new book project and (b) write a journal article on the television locations industry in Budapest, Hungary. The book draws on research he has conducted over the past five years into the impact of smart technologies on television culture. Tentatively titled, *Television Gets Smart*, the book examines recent changes in television technology, the television industry, television reception, and television content. This book will enhance the large lecture course that Havens teaches, which currently contains a weeklong unit on smart television. Based on the research he conducts, he will expand the unit to two weeks and also build a written assignment around students' uses and expectations of smart TV technologies. The second project on locations shooting in Budapest will augment the analysis of contemporary television drama in Havens' graduate courses. These projects will contribute substantially to our understanding of television social importance in today's world.

HEITZMAN, KENDALL, Associate Professor, Asian & Slavic Languages & Literatures, 7 years of service, Fall 2020

Title: The International Style in Japanese Poetry, 1964-present

Professor Heitzman will research materials produced by and related to what he is calling the International School, a group of Japanese poets who engaged with writers and artists around the world to an unprecedented degree in the 1960s and 1970s. The most central of these writers were in residence at the University of Iowa as part of the International Writing Program (IWP) in the 1970s. Heitzman will use major archives in Japan to find materials unavailable in the U.S., and will work with surviving writers or their families and Japanese scholars and editors to develop a literary history of the time period and to find rare items published in small print runs, trade magazines, and other relatively inaccessible venues. This project will result in the first book-length study in English of these crucial poets, additions to IWP and UI Libraries websites detailing these writers' connections to Iowa, and additions to a collection to be preserved by Special Collections in the UI Main Library.

HOLLINGWORTH, ANDREW R, Professor, Psychological & Brain Sciences, 17 years of service, Spring 2021

Title: Using Perceptual and Cognitive Science to Understand Errors in Radiological Image Analysis

The PDA will expand a collaborative research program between Professor Hollingworth and Dr. Claudia Mello-Thoms (Radiology, UIHC). The purpose is to better understand sources of error in cancer diagnosis from radiological images, a significant cause of death in the U.S. and worldwide. Most of these errors are perceptual and cognitive in nature. Hollingworth has expertise in the perceptual and cognitive processes involved in understanding complex scenes. The PDA will allow Hollingworth to gain substantial new expertise in the specific area of medical image analysis and to develop novel methodologies (e.g., the use of eye tracking in 3-D breast and chest images) and novel analytical techniques. The work will be integrated into graduate and undergraduate courses on perception and will benefit the training of students in UIHC Radiology. The collaboration will leverage an improved understanding of diagnostic errors to develop radiological training programs at UIHC that will lead to a significant reduction in error rates.

HOURLCADE, JUAN PABLO, Associate Professor, Computer Science, 13 years of service, Spring 2021

Title: Write 2nd Edition of Child-Computer Interaction Book

The purpose of the PDA is to write the second edition of Child-Computer Interaction, the most comprehensive book on the topic of designing interactive technologies for children. This is a growing field that has developed a strong and dedicated research community during the past fifteen years. It is also an interdisciplinary field, where computer science, developmental psychology, pedagogy, and new media interact. The book currently covers research through 2014 and is in need of an update in order to stay relevant. Professor Hourcade is using the first edition of the book in a computer science course at the University of Iowa, as well as at other institutions, such as the University of Washington. Hourcade will make the second edition of the book freely available online, in the same manner the first edition is now available at childcomputerinteraction.org.

IOVANOV, MIODRAG C, Associate Professor, Mathematics, 6 years of service, Fall 2020

Title: Interactions Between Algebra and Combinatorics

Professor Iovanov's research is in algebra and connections and applications to other fields such as combinatorics, representation theory, discrete mathematics, cryptography and coding theory.

He will use this knowledge to tackle two outstanding questions, one in representation theory (characterization of algebras of finite representation type, via combinatorial algebras), and one in graph theory with outreach in other fields such as computer science, networks, and engineering (graph reconstruction conjecture). Iovanov will finalize several ongoing projects started over the past few years, most joint with current and former PhD students and postdoctoral researchers at UI, and he expects a number of publications in high visibility journals, which will contribute to the department's and university's recognition. The interdisciplinary approach will continue to generate ideas suitable for both graduate as well as undergraduate research, which Professor Iovanov will actively seek during the PDA. He plans to implement such acquired experience in teaching and advising and use it to attract future students to math and STEM disciplines.

JESKE, DIANE, Professor, Philosophy, 27 years of service, Spring 2021

Title: Friendship and Partiality in Ethics

Professor Jeske will complete substantial work on two major projects: The Routledge Handbook of Philosophy of Friendship (under contract) and a monograph with the working title "The Justification and Scope of Partiality." The Handbook will be a major anthology with 45-50 original contributions from leading philosophers in the philosophy of friendship. Jeske will write the introduction to the anthology and will also continue providing comments to authors on their submissions. In the monograph on partiality, she will extend her research program on special obligations to intimates, considering recent literature on the scope of justified partiality, especially as it applies in the controversial cases of biological family, compatriots and domestic companion animals. The question of whether and how to justify partiality to various persons is central both to ethical theory and to our actual moral lives: in a world radically divided in terms of welfare and access to resources, those of us who live privileged lives need to critically examine our partiality for a small number of people and our patterns of differential concern.

KE, CHUANREN, Professor, Asian & Slavic Languages & Literatures, 26 years of service, Fall 2020

Title: Second Language Acquisition of Chinese in Study Abroad Contexts: Proficiency Gains, Program Design and Management, Homestay Experience, and Asian Heritage Learners

Professor Ke will conduct an empirical study to: 1) examine the proficiency development of 1173 learners of Chinese in at-home and study-abroad settings, 2) explore their interaction with different components of study abroad programs, 3) scrutinize their socialization processes in homestays, and 4) investigate the role of identity in Asian heritage learners' Chinese learning. During the PDA, Ke will run statistical analyses on the quantitative data and analyze the qualitative data. The PDA will provide protected time to submit articles to top-tier journals in the field of second language acquisition. This project will benefit study-abroad students at UI and other places as its practical suggestions will be informative for language instructors and curriculum designers to help students make the most of their experiences. Also, Ke will incorporate this project in his graduate courses. The students taking these courses will gain a better understanding of the nature and complexity of language learning in study-abroad contexts.

KLEINSCHMIT, JULIA L, Associate Professor, Social Work, 20 years of service, Spring 2021

Title: Evaluation of Online Part-Time MSW Program

Professor Kleinschmit will conduct a quasi-experimental study comparing the new Online MSW program with standard part-time MSW programs in Sioux City and the Quad Cities. She will compare students on demographic characteristics; process measures (educational progress, their perceptions of support and program satisfaction); and outcome measures (educational, employment and professional competence). This research will significantly contribute to the body

of knowledge regarding online social work education, enhancing the University of Iowa's reputation as a leader in this area. Findings will inform curriculum and program revision to improve the Online MSW Program. She will share findings with UI Distance and Online Education for use by other online programs. She will also share the process and outcomes with students in graduate courses. During the PDA, Kleinschmit will prepare a manuscript for publication describing the overall design of the Online MSW program and development of the evaluation. She will submit abstracts for presentation to two national social work conferences.

LAURIAN, LUCIE ALICE C, Professor, Urban & Regional Planning, 15 years of service, Spring 2021

Title: City Wisdom, Balancing Acts in Urban Planning

Dr. Laurian will pursue a book project titled: *City Wisdom: Balancing Acts in Urban Planning*. It proposes a fresh perspective on sustainable cities by exploring how lucid integrity, versatility and the power of imagination can promote wise, livable and adaptive cities. The book draws from creative change practices, e.g., rethinking urban-nature relations, returning roadways to pedestrians, transforming industrial blights into community assets. It expands on Laurian's works on sustainability and, if funded, on a Korea Foundation Fellowship. Laurian's PDA will be devoted to international travel to research innovative practices in Asia and Europe, and to preparing the manuscript. The book and the lessons learned through the research will benefit UI students by informing Laurian's teaching, presentations to UI departments (e.g., Planning, Geographical and Sustainability Sciences, Civil and Environmental Engineering), and possibly an exhibition at the Main Library Gallery. The book will also benefit urban planning practice in Iowa and nationwide by proposing practical innovative strategies for urban improvements, resilience and adaptation.

LAVEZZO, KATHRYN M, Professor, English, 20 years of service, Spring 2021

Title: Race in Medieval Europe: Making Whiteness Visible

Professor Lavezzo will use her PDA to complete her book project, "Race in Medieval Europe: Making Whiteness Visible." Challenging the oft-held view that the middle ages predated the emergence of race and racism, "Race in Medieval Europe," surveys political ideas about inherited and unchanging differences between groups of people in the medieval west. By shedding light on our understanding of the workings of prejudice and gearing her book toward an audience of non-specialists, Lavezzo's study benefits both Iowa and society at large. The project directly impacts her teaching, in undergraduate and graduate courses on the representation of Jewish, Irish, African, Middle Eastern and other peoples in medieval literature, including Chaucer.

LIN, QIHANG, Associate Professor, Management Sciences, 6 years of service, Fall 2020

Title: Efficient Algorithms for Data-Driven Constrained Optimization in Machine Learning

Machine learning systems have been increasingly used during high-stakes decisions, influencing school admissions, credit scores, criminal sentences and so on. This raises an important question on how to ensure these systems do not discriminate based on race, gender or other status. With this PDA, Professor Lin will be able to collaborate with Professor Nadarajah at University of Illinois at Chicago on developing effective techniques that prevent an AI system from disproportionately hurting a minority group of people. Their approach is to design a machine learning system based on a mathematical optimization model where data-driven constraints are used to balance accuracy and fairness of the produced system. Using their algorithms, schools, corporations and governments will be able to make decisions based on these fair models, reducing their risk of violating anti-discrimination laws. Moreover, the research should yield multiple publications in and will be presented in top conferences and inform Professor Lin's courses at UI.

LINDERMAN, MARC A, Associate Professor, Geographical & Sustainability Sciences, 14 years of service, Spring 2021

Title: Plot to Regional Level Scaling of Terrestrial Monitoring Data

In the scope of the PDA proposed, Professor Linderman will develop a sensor network and high-performance computing capabilities to assess the impact of scaling in situ monitoring to regional level analyses of vegetation dynamics and weather forecasts. Linderman will integrate data from instruments developed at the University of Iowa such as an airborne hyperspectral sensor, multispectral and thermal imaging aboard Unpiloted Aerial Vehicle (UAV) platforms, and field sensor networks in regional analyses. Regional analytical capabilities will be further augmented through Google Earth Engine, cloud computing coupled with a satellite data archive. These efforts will directly contribute to ongoing research, the development of future proposals, and foster collaboration and inter-disciplinary analyses of fundamental ecological, agricultural, and hydrological processes vital to the sustainability and prosperity of the State of Iowa.

LO, AMBROSE, Associate Professor, Statistics & Actuarial Science, 5 years of service, Spring 2021

Title: A Predictive Analytic Approach to Optimal Reinsurance Design

The past few decades have seen an unparalleled surge in the frequency and severity of different kinds of catastrophes. These catastrophes wrought widespread havoc on society in general and highlighted a critical need for insurance companies in particular to develop alternative strategies for more accurate predictions of catastrophic events and more effective risk mitigation. In this project, Professor Lo proposes to construct data-driven predictive models based on real, publicly available insurance data and use these models to formulate and evaluate optimal reinsurance policy recommendations. The completion of this project will produce a set of statistically sound and practically useful tools to assist insurance companies in designing robust, data-based reinsurance policies and, more broadly, in measuring and managing the risk of their insurance and investment portfolios effectively. Lo will use the new research findings of the project to compile a series of case studies, which allow students to appreciate how predictive analytic theory can be applied to actuarial practice.

MARKLE, KEVIN S, Assistant Professor, Accounting, 5 years of service, Fall 2020

Title: International Tax Competition after BEPS

Over the last 25 years, governments around the world have been struggling to collect corporate tax revenues as multinational corporations have become more and more adept at shifting profits to low-tax countries. There appears to be a general movement toward more international cooperation on tax matters following the OECD's BEPS project. Professor Markle will work with colleagues at European universities to study the effects of these changes on countries (both those that cooperate and those that do not) and on the firms themselves. The goal will be to publish papers in top-tier academic journals. This work will be directly applicable to the course Markle teaches in the Master of Accounting program which looks directly at how tax policy affects business strategy. The benefits of this project will extend beyond the classroom as well. Insurance is a field in which policymakers at all levels of government pay attention to the research. Empirical findings are crucially important as governments navigate the shifting corporate tax landscape.

MCCLELLAND, BILL C, Professor, Earth & Environmental Sciences, 11 years of service, Fall 2020

Title: Developing International Collaboration to Evaluate the Role of Svalbard in the Tectonic Evolution of the Arctic

Professor McClelland plans to initiate an international collaboration with researchers at the Polish Academy of Science, Krakow, Poland and Uppsala University, Sweden to generate funding and logistical synergy necessary for conducting geologic field work in southwestern Svalbard. The collaborative research will build on McClelland's prior Arctic research aimed at defining the tectonic evolution of the northern margin of North America. The research will specifically result in a proposal to the National Science Foundation, a review article on the tectonic evolution of the North American Arctic margin, and public presentations at three institutions in Poland, Sweden and Norway. International research opportunities will be developed for Iowa undergraduate and graduate students. The project will lead to new insights on tectonic processes in the circum-Arctic region, generate new research directions and proposals, and produce new teaching material for undergraduate and graduate classes.

MCMURRAY, BOB, Professor, Psychological & Brain Sciences, 15 years of service, Spring 2021

Title: The Cognitive Science of Language and Reading Disorders: Toward a Theoretical Synthesis

Language and reading disorders affect 15% of children, and 60% of Iowa children do not read proficiently. Professor McMurray applies innovative cognitive science paradigms to these pervasive problems. He uses eye-tracking to study language as it unfolds over milliseconds. This work suggests that language processing develops slowly and has a unique profile in language impairment. This has led to a large NIH-funded study based in Cedar Rapids, and to commercial reading assessments. McMurray proposes to spend a semester at Macquarie University in Sydney, Australia where several scholars study these issues. It extends his work in two ways. First, there is not a theoretical synthesis of his empirical work, and it is not clear how to translate these findings to intervention. This synthesis can be better developed at Macquarie. Second, McMurray's work focuses more on language than reading. At Macquarie he will gain expertise on reading and build new experiments to run in Iowa. This will lead to better assessment and intervention for reading and language, and he will integrate reading into his courses.

MEURICE, YANNICK, Professor, Physics & Astronomy, 29 years of service, Fall 2020

Title: New Applications of Quantum Computing in High Energy Physics

Professor Meurice will work with physicists at the University of Maryland and quantum computing companies to open new fundable research and renew a large multi-institutional grant. He will develop quantum computing tools for problems in high energy physics that are beyond the reach of classical computing, such as real time evolution of strongly coupled systems. The new developments will be used to create a new course on quantum computing for undergraduate students and will be incorporated in classes on quantum mechanics and particle physics. They will contribute to student training and help their admission to graduate programs, postdoctoral appointments or employment in the emerging quantum computing industries. The State of Iowa played an important role in the development of classical computers. Professor Meurice's goal is to have the State playing a similar role in the development of quantum computers and participation in upcoming quantum centers.

MOORE, MICHAEL E, Associate Professor, History, 11 years of service, Fall 2020

Title: The End of the Carolingian Empire: The Cadaver Trial of Pope Formosus

With the support of a PDA during Fall 2020, Professor Moore will complete his book about the “Cadaver Trial” of Pope Formosus. This gruesome posthumous trial reveals changes in political culture and values at the end of the Carolingian Empire (888-900), when institutions of religion and politics were undermined. Moore will undertake original research in Latin sources and compose the remaining chapters of his book. Moore’s research on this topic produces knowledge essential to his undergraduate teaching, especially his popular courses on the Middle Ages. A better understanding of the dangers of political violence and the turmoil that arises when traditional institutions are undermined, benefits students, and the citizens of the Iowa by highlighting the value of peaceful political culture, and encouraging society at large to appreciate the civil exchange of ideas, and the importance of togetherness in times of difficulty.

OGREN, CHRISTINE A., Associate Professor, Education Policy & Leadership Studies, 20 years of service, Fall 2020

Title: Completion of Book on the History of U.S. Schoolteachers’ “Summers Off”

Professor Ogren will complete a book manuscript on the history of how U.S. school teachers have spent the summer and present her work to international scholars in Paris. “Summers Off” investigates how teachers’ summer activities challenged or confirmed race and gender roles, influenced their social-class standing, and affected their professional skills and the schools. The book will consist of an introduction, five core chapters that focus on one type of activity between the 1880s and 1930s, and an epilogue. During the PDA, she will revise or finish writing each chapter and the introduction, and draft the epilogue, in order to submit the manuscript early in 2021. This project will enhance four of the graduate seminars she teaches. With its focus on understudied aspects of teachers’ lives and implications for school systems, “Summers Off” will contribute to scholarship on the history of education and discussions of teacher professionalism and salary issues among policymakers and general audiences.

PARK, ALYSSA, Associate Professor, History, 8 years of service, Fall 2020

Title: Homeward: Korean Repatriation and the Unresolved Politics of Colonization and War

Professor Park will conduct research for her book project on the history of Korean repatriation after World War II. Written for a scholarly audience, it will be the first book to explore the incomplete decolonization of Korea and Korea’s place within a new international order in East Asia. It illuminates why the repatriation of Koreans was accomplished only in part and explores the communities of Koreans who remained in Japan and the Soviet Union. The project will broaden our understanding of migration in East Asia, elucidate meanings of citizenship, and explore the consequences of Korea’s colonial past. Park will use the PDA in Fall 2020 to conduct research at the National Archives in College Park, MD, as well as in libraries in Korea. The themes of migration and empire are central to her teaching at the University of Iowa; her research will thus be beneficial to students. Her emphasis on regional and global themes will also prepare students to engage as global citizens.

PEMMARAJU, SRIRAM V, Professor, Computer Science, 19 years of service, Spring 2021

Title: Collaborative Research in Distributed Graph Algorithms and Computational Epidemiology for Healthcare Acquired Infections

Professor Pemmaraju plans to use his PDA to actively collaborate with off-campus colleagues and make important strides in the two areas of his research: (i) distributed graph algorithms and (ii) computational epidemiology for hospital acquired infections (HAIs). Pemmaraju is part of

active collaborations on distributed graph algorithms with researchers at the University of Houston, City University of Hong Kong, and Technion (Israel). He is also involved in computational epidemiology projects with researchers at University of Virginia and Virginia Tech. He aims to use the PDA to spend about 2 weeks each with his collaborators in Houston, Technion, and Virginia. He will spend the remaining time in Iowa City, mentoring PhD students, preparing for his visits, writing papers consisting of results and grant proposals consisting of ideas that will presumably be the outcome of his face-to-face interactions with his collaborators.

PEROVIC, KATARINA, Associate Professor, Philosophy, 8 years of service, Spring 2021
Title: A Book Project on Pseudo-Problems of Metaphysics

Metaphysics has a reputation of being the most central and the most disputed philosophical discipline. Its centrality comes from the fundamental questions it explores; its controversial status is due to various attacks on its subject-matter and methodology. The book that Professor Perovic will write with the help of the PDA aims to defend metaphysics by ridding it of its pseudo-problems -- problems that commit the fallacy of the complex question by tacitly taking for granted certain unsubstantiated, or even false, assumptions. In the book, she will explore the questions "Why is there something rather than nothing?"; the problem of universals and Bradley's regress problem; the problem of personal identity; and the problem of the nature of time and persistence. In each case she will uncover the underlying assumptions that contributed to the formulation of the problem, and in each case, she will dispute those assumptions. The result of such an analysis will not always be a complete rejection of the original problem; in some cases, it will simply result in a more perspicuous and fruitful formulation of the original problem. Parts of the book will be published as articles in journals.

RACEVSKIS, ROLAND, Professor, French & Italian, 21 years of service, Spring 2021
Title: Self, Place, and Environment in Early Modern French Literature

Professor Racevskis will prepare a book manuscript on the significance of material environments for the human experience in works of seventeenth-century French literature. The focus throughout the book is on the urgent question of humanity's relationship to the nonhuman world, and how that relationship has changed over historical time. A central argument holds that we have much to learn from re-examining works from earlier periods in environmental context. This research and publication resulting from contributes to Racevskis's teaching on environmental literature, both at the undergraduate and graduate levels. Outside the classroom, the research has already provided opportunities and will continue to contribute to his involvement in interdisciplinary discussions of sustainability across the campus and Iowa City community and via local media such as International Programs WorldCanvass.

RAGHAVAN, MADHAVAN, Professor, Biomedical Engineer, 19 years of service, Spring 2021
Title: Biomedical Device Design and Development

Dr. Raghavan studies the application of engineering mechanics (study of forces and motion) to the understanding, diagnosis and treatment of heart and lung pathologies. His lab has previously developed technologies that have been licensed to the medical device industry. For this PDA, he proposes to explore novel ideas in the design and development of a medical device that can be used to monitor blood flow in the hearts of critically ill patients. Working with colleagues at the University of Iowa, Dr. Raghavan seeks to test proof-of-concept of his novel high-risk high-reward ideas, publish his findings, and prepare external funding proposals for research and commercialization of technology. The new knowledge and experience gained in both device design and commercialization will be incorporated into his teaching efforts through new course

content and laboratory mentoring. Commercialization efforts will contribute to economic development in the State of Iowa.

RANTANEN, JASON, Professor, Law, 8 years of service, Fall 2020

Title: Understanding Patents

Patents are a core tool for incentivizing technological progress. In order to function effectively in this role, there must be a good fit between the contribution of the inventor and the exclusive rights granted by the federal government, as well as widespread shared recognition of the meaning of a patent. Professor Rantanen's research examines the legal and social dimensions of patents using a variety of methodologies. During the PDA, Rantanen will write a book synthesizing his prior research and exploring new avenues of how people understand patents. The results of Rantanen's research will help shape patent law and provide policy makers, attorneys and scholars with a better understanding of the way patents function in the world.

REITZ, JOHN C, Professor, Law, 36 years of service, Spring 2021

Title: Comparative Law and the Political Economy of Legal Systems

Professor Reitz will conduct research and writing for major portions of a book analyzing the ways in which important differences in legal rules, procedures, and institutions reflect differences in political economy, i.e. the degree to which the state intervenes in the market to assure the general welfare. By showing the congruence between differences in specific legal rules, procedures and institutions and the overall differences in national political economy, Reitz hopes to give comparative law scholars and students a valuable tool for understanding and making sense of differences in legal systems. The study will focus on comparing the law of the U.S., France, Germany and Great Britain. It will be the first study to show how each country's political economy affects all aspects of that country's law in a systematic way. The work will be important to comparative law teaching and scholarship.

RENO, MARY HALL, Professor, Physics & Astronomy, 29 years of service, Fall 2020

Title: Particle Astrophysics: Neutrino Signals from High Energy Astrophysical Processes

Professor Reno will complete computer simulations and data analysis of signals of high energy neutrinos from astrophysical sources. High energy neutrinos are messengers of processes that occur in the most energetic sources in the universe, yielding information that is not accessible from telescopes. The software developed in this project will benefit data analysis and detector development for space-based neutrino detectors. Reno will also use existing data to understand properties of astrophysical neutrino sources. In addition to the simulation software, this project will result in several journal articles, a proposal to NASA, and new material for undergraduate and graduate courses.

SANDER, HEATHER A, Associate Professor, Geographical and Sustainability Sciences, 8 years of service, Fall 2020

Title: Proposal for PDA to Improve and Expand Urban Ecosystem Monitoring and Outreach in Eastern Iowa

Professor Sander will use her PDA to build: 1) urban ecological research capacity and theory and 2) understanding of urban ecosystems among non-scientists. Key activities include conducting analyses related to an urban ecosystem monitoring network she maintains and building skills and collaborations to support long-term network operation and research quality. She will produce publications, presentations, and grant proposals to further urban ecological research and solidify UI's place in the field. Establishing urban ecology expertise at UI will provide more opportunities

for research funding, a new career path for UI students, and could lead to the design of more sustainable Iowa cities. Sander will also use her PDA to expand an elementary school ecology outreach program and create a school biodiversity monitoring network, building understanding of nature among Iowa children and generating data to support the design of campus vegetation to support student success and species conservation. This PDA will also produce college and elementary school instructional materials.

SCHERER, MICHELLE M, Professor, Civil-Environmental Engineer, 21 years of service, Fall 2020

Title: Communicating Science: Lessons from Art, Theatre, and Storytelling

Professor Scherer will write a book on how to teach STEM students to communicate more effectively. The book will contain easy to use, practical teaching materials and is tentatively titled "Communicating Science: Lessons from Art, Theatre, and Storytelling." The book will be used in four communication courses. The need for communication courses as an integral component of STEM education is clearly articulated as a required component of both undergraduate engineering accreditation, as well as federal graduate student training grants. Science communication is a critical skill and meaningful engagement between scientists and the public requires effective communication. Scherer's book will be a valuable resource for those teaching communication classes. It will provide high-quality teaching materials to prepare students to be workplace-ready in an age where communication skills are considered vital.

SEVERINO, CAROL, Professor, Rhetoric, 29 years of service, Spring 2021

Title: Tutor Scaffolding and Second Language Writing Development (SLW) in English as a Second Language and Foreign Language (FL) Settings

Professor Severino will expand her work on second language writing (SLW) development, adding the dimension of different types of tutor/teacher scaffolding and their possible correlations with SLW development. This project will analyze recorded tutorial sessions along with before and after survey data and writing samples from writing center students attending tutorials all semester. She will extend this work to the foreign language (FL) learning setting and write for an advanced Spanish course and be scaffolded herself in the Spanish Writing Center she helped create. She will record and analyze her tutorials and her writing and keep a journal to help her analyze her own SLW development. The resulting products, presented in articles for different journals, will fill the need in the Writing Center field for scaffolding studies of tutorials and in the SLW field for longitudinal and text-based research on SLW. Outcomes will benefit the collaboration between the UI Spanish and English Writing Centers, students' first and second language writing development at UI and beyond, instructors' scaffolding of writing and learning, and the quality of written communication in society in general.

SHAW, SCOTT K, Associate Professor, Chemistry, 7 years of service, Fall 2020

Title: Expanding Capabilities in Chemical Surface Science

Professor Shaw's research develops new ways to reveal how the chemicals in different materials 'interface' with each other. A few devices that rely heavily on such chemical interfaces include touch screens (finger + glass), medical stents (plastic + blood vessel), and the lithium ion battery (carbon electrode + lithium ions). Understanding these chemical relationships is critical for enhancing material performance, prolonging device life and reducing costs to consumers. These measurements require powerful instruments, often custom built for their tasks. Shaw is an expert in such techniques and has identified several new methods that he will learn and use to answer outstanding questions. These include: 1) using cross polarization microscopy to observe how liquids self-organize into large clusters incorporating hundreds of thousands or millions of

molecules, and 2) using atomic force microscopy to learn how dust falling onto a surface can lead to bacterial growth and ultimately affect regional air quality. These topics may seem vastly different, but both advance basic understanding of the chemical interface and will advance Shaw's research program.

TIVANSKI, ALEXEI V, Associate Professor, Chemistry, 12 years of service, Fall 2020
Title: New Directions in Materials Science Research

Professor Tivanski's research program involves the development of novel methods that utilize cutting-edge microscopy to study size-dependent physical-chemical properties of organic and inorganic nano- and macro-dimensional solids with unique physical-chemical properties for potential applications in devices, sensing and energy storage that may benefit society. This research is highly interdisciplinary and involves collaborations with researchers from other fields of science and engineering. A new collaborative research direction with an organic chemistry faculty colleague at the University of Iowa has been initiated. The project aims to develop a new direction in the field of highly porous and flexible metal organic frameworks with emphasis to study effects of crystal downsizing to the nanoscale level on the mechanical properties of these crystalline solids. The proposed PDA will facilitate ongoing efforts to build this new research program, to expand research expertise, and to produce publications and grant applications. Success in these activities will benefit both undergraduate and graduate research students and will add new emerging research areas at the UI.

UKSTINS, INGRID, Associate Professor, Earth & Environmental Sciences, 12 years of service, Fall 2020

Title: Experimental Volcanological Constraints on Explosive Pyroclastic Volcanism on Venus

Venus is a volcanic planet with abundant volcanoes up to hundreds of kilometers in size. However, we have little understanding of the basic information about its geologic history, including the age, composition and style of volcanic eruptions. Its extreme surface temperatures of 460°C and atmospheric pressure 93 times greater than Earth are thought to suppress explosive volcanic eruptions and yet there are abundant deposits that are interpreted to be explosive in origin. Professor Ukstins will use the Fragmentation Lab at Ludwig Maximilian Univ. (Munich, Germany) to experimentally create explosive volcanic eruptions at Venus surface temperatures and pressures in order to determine what conditions are necessary, and to quantify if those conditions could exist on Venus in the past or currently. These experiments will be used as a proof of concept to submit a NASA proposal for further research. Future funding will support both undergraduate and graduate student research, facilitate collaborations with colleagues at a world-class experimental geology research laboratory and provide critical data that supports NASA's Strategic Plan and its decadal 2013-2022 vision for planetary science.

WATT, SHERRY K, Professor, Education Policy & Leadership Studies, 19 years of service, Spring 2021

Title: Synthesizing and Disseminating Evidence for the Theory of Being

Professor Watt will use her PDA to synthesize 20 years of research on ways of being in controversial dialogue across controversial difference into print (a book-length manuscript and curriculum) and digital (a podcast and blog series) media. In her latest book, *Designing Transformative Multicultural Initiatives* (2014), she introduces the Authentic, Action-Oriented Framing for Environmental Shifts (AAFES) framework and expounds upon the Privileged Identity Exploration (PIE) model. The AAFES and the PIE Model identify the individual skills and environmental conditions for having productive dialogue across difference. In recent years, presentations, workshops, research collaborations and writings on AAFES and PIE have given

rise to a unifying framework, the Theory of Being (TOB). The TOB focuses on strengthening 'how' (processes) to engage in difficult dialogues rather than solely on 'what' (outcomes) to address the problem. Synthesizing content from over 100 publications that reference this body of work makes TOB more accessible to educators, community organizers, business owners, and public officials. This synthesized content will inform her teaching and advance her research agenda.

WEINER, JOSHUA, Professor, Biology, 15 years of service, Fall 2020

Title: How the Brain Works (And Why it Doesn't): A New Introductory Book About Neuroscience

During this PDA, Professor Weiner will research and write an introductory neuroscience book appropriate for general education college students, high school AP courses and interested laypeople. "How the Brain Works (And Why it Doesn't)," is under contract with Elsevier (contract signed May, 2018; book due March, 2022) for publication by their Academic Press imprint. Based on Weiner's popular non-major course, the book will provide a brief but scholarly introduction to the breadth of neuroscience research, accessible to readers with little biology background. This PDA will enhance student learning outcomes: Weiner will develop new, engaging topics for the book that can be incorporated into classes, and student access to the book will free him to deploy more active learning approaches and fewer didactic lectures. As Associate Director for Education and Outreach of the Iowa Neuroscience Institute, Weiner will also engage in public outreach events across Iowa.

WHALEY, DEBORAH E, Professor, American Studies, 12 years of service, Fall 2020

Title: Feeling Her Fragmented Mind: Women, Race, and Dissociative Identities in Popular Science, Literature, and Culture

Professor Whaley's PDA will examine portrayals of women and mental wellness in medical journals, literature, visual and performing arts, and popular media. More than an analysis of popular science, history, literature and media, this study draws from cultural history, disability studies and theories of emotional precognition to expose the ways women from various backgrounds experience differential medical care. Expected outcome: the completion of two book chapters for a monograph. Benefits to the university and students: the creation of an undergraduate course on portrayals of mental wellness in popular culture and a graduate course on theories of race, gender and disability. Benefit to the state of Iowa: data indicate that our state is underfunded for mental health resources and is devoid of enough mental health practitioners who have the cultural competence to treat the state's growing, diverse population. This study intervenes by providing medical practitioners, researchers and laypersons with an understanding of the stakes involved in medical policies and practices in relationship to diverse populations.

WILLIS, ELIZABETH, Professor, Creative Writing, 4 years of service, Spring 2021

Title: Liontaming in America

Professor Willis's project is a book-length manuscript of documentary poetry and prose exploring the intersections of art (especially theatre, film and poetry) and religion on the shifting frontier of the American West from 1830 to 1960. Told from multiple perspectives, this work is especially concerned with the ways that religious, racial and sexual differences are perceived and performed. The resulting book seeks to build a more nuanced view of family, belief and American identity in the era of settler colonialism. Willis has been writing and conducting research for this book for several years and will complete the writing, editing, and organization of the whole. A PDA in support of this project will directly contribute to Willis's work in the classroom, especially her poetry workshops, her seminar on book composition, and her supervision of graduate theses. Some of this work relates directly to the state of Iowa and will heighten her students' understanding of the histories that surround them.

WU, YU-HSIANG, Associate Professor, Communication Sciences & Disorders, 7 years of service, Spring 2021

Title: Cost-effective Hearing Aid Delivery Models for Older Adults with Dementia and Hearing Loss

Because hearing loss may contribute to cognitive decline and neuropsychiatric symptoms commonly associated with dementia could be exacerbated by poor communication resulting from hearing loss, hearing aids (HAs) are regarded as an important non-pharmacological intervention for older adults with dementia. However, there is no strong evidence to support the benefits of HA intervention in this population. Wu will develop and submit a grant proposal to conduct a placebo-controlled, double-blinded, randomized-controlled clinical trial to examine the benefits of HA intervention for older adults with dementia relative to a placebo, and to compare the outcomes, value and candidacy of two HA service-delivery models, focusing on communication functions, dementia-related symptoms, quality of life and caregiver burden. The proposed activity will pave the way for a multi-site, randomized and placebo-controlled trial that will optimize audiological rehabilitation for older adults with dementia and could lead to substantial improvements in quality of life of this population.

YE, YANGBO, Professor, Mathematics, 29 years of service, Spring 2021

Title: Number Theory and Its Applications in Internet Security

In this PDA, Professor Ye will conduct research seeking: 1) scientific evidence on whether large integers can be quickly factored into primes and 2) bounds for automorphic L-functions and their power moments toward the Lindelöf Hypothesis. The project will benefit his teaching and students at the University of Iowa as his three graduate students will actively participate in the research for their doctoral theses. In addition, his research will have far-reaching impact on internet security and theoretical mathematics. Ye's results on the computational complexity of integer factorization will provide a clearer understanding of the security of internet commerce and internet finance, benefiting the State of Iowa and society in general.

YOUNG, RACHEL, Associate Professor, Journalism & Mass Communication, 6 years of service, Spring 2021

Title: Representing Stigma: Advocates, Journalists, and the Opioid Crisis

Professor Young will study how stigma emerges in news coverage of the opioid crisis. Stigma toward people who use drugs keeps them from seeking treatment and reduces support for humane drug policies. Advocates see reducing stigma in news coverage as crucial to advancing public support, but many efforts to change the news narrative aren't grounded in an understanding of journalists' roles and decision-making. This study will provide much-needed data on how journalists understand the harms and functions of stigma in their own reporting. Young will interview journalists and public health advocates about the effects of stigma on people who use drugs and drug policy. The study will result in peer-reviewed articles and improved guidelines on working with journalists who cover the opioid crisis. Young will also incorporate findings and insights from this project into her teaching in existing courses, and development of a new course training students to be health journalists.

ZAJACZ, RITA, Associate Professor, Communication Studies, 11 years of service, half time for academic year 2020-21

Title: Standards and Sovereignty: Reorienting the Telecommunications Infrastructure in Post-socialist Hungary, 1989-1999 + Dark Markets: a Challenge to State Power

Professor Zajacz will use the PDA sequentially for two purposes: to conduct research (Fulbright application pending) for an article applying her analytical framework for “network control” to a new case and to write a book proposal on what challenges the use of anonymizing technologies in dark markets pose for state power. The first project will focus on the way Hungarian policymakers defined the national interest as they transitioned out of the Soviet sphere of influence and sought to link the telecommunications network and the emerging data network to the Western security alliance. The case will inform her advanced class, Communication, Technology and National Security, which helps students understand the extent of U.S. power over the Internet. The second project will inform her intermediate class, Privacy and Anonymity on the Internet, which examines the impact of anonymizing network technologies on different facets of contemporary life (speech, money, markets etc.) and lays the groundwork for her next full-length monograph. Both projects help us understand the challenges and opportunities states encounter in their attempt to assert control over a globally interconnected network.

ZALOZNAYA, MARINA, Associate Professor, Sociology, 7 years of service, Fall 2020

Title: Women, Informal Networks, and Everyday Resistance in Putin’s Russia

Professor Zaloznaya will use the PDA to collect data, and begin writing, a book on women’s everyday resistance to authoritarianism in Russia. The first goal of this project is to analyze how an increasingly hostile neotraditionalist governance affects Russian women’s lives at home, at work and in the public sphere. The second goal is to document the characteristics of women’s informal networks of support, including their size, structure, density and functions. The final goal is to assess whether and how these networks buffer Russian women from the legalized oppression by the state and, possibly, give them an opportunity to resist. To achieve these objectives, Zaloznaya will travel to Russia in summer and fall of 2020 to interview 200 women, administer 200 surveys focused on their social networks, and carry out 360 hours of ethnographic observations in local courts. The proposed book will challenge the assumption of disappearing resistance among women in neotraditionalist autocracies like Russia, contribute to network theories of gender, and yield an example of methodological innovation in international sociology.

ZHANG, XIAOYI, Associate Professor, Mathematics, 10 years of service, Spring 2021

Title: Critical Nonlinear Schroedinger Equations and Integrable Systems

Professor Zhang is an active researcher in the area of dispersive equations. Preceding research she has conducted has resulted in high quality publications, conference invitations and research fund. The PDA award will assist Prof. Zhang to continue her research on the challenging problems and enhance the academic impact through her future works. Part of her activities during the award period will involve editing lecture notes for the existing course and writing the notes for the PDE learning seminar, which will benefit both the graduate and undergraduate education in the University of Iowa.

UNIVERSITY OF NORTHERN IOWA

ANDERSON, JOHN, R., Associate Professor, Management, 6 Years of Service, AY 2020-2021
Title: Sources of Sustainable Competitive Advantage of Small Contract Manufacturers in Global Value Chains

Dr. Anderson's research project focuses on small manufacturers in global value chains. Through the contextual lens of global value chains in an inductive study of small plastics manufacturers in China, this research project aims to explore how application of self-organizing systems has enabled sustained competitive advantage in small contract manufactures. More specifically, Dr. Anderson's project seeks to examine a previously unexplored source of competitive advantage for small manufacturers at the bottom of global value chains where the main value added comes from labor input. This project will allow for the collection and analysis of interview data in China. The Chinese and Iowan economies are intertwined on many levels. It is imperative that Iowans have a strong understanding of China and Chinese businesses. Dr. Anderson's project will facilitate cutting edge knowledge of the strategic competencies maintained by Chinese contract manufacturers. The information will be valuable for a wide cross section of manufacturers in Iowa.

BERENDZEN, PETER, Professor, Biology, 15 Years of Service, Fall 2020
Title: Application of Genome-wide SNP Data the Landscape Genetics of the Rainbow Darter in the Upper Mississippi River

Dr. Berendzen's PDA project is to complete analyses on his recent study of Iowa's native fauna. He recently examined the spatial genetic structure of the rainbow darter in tributaries of the upper Mississippi River in northeast Iowa. The results were surprising; the genetic signature revealed a single genetic population distributed across the geographic region suggesting widespread gene flow despite the highly fragmented landscape. His subsequent research involved determining if single nucleotide polymorphism genotyping can be utilized to increase the sensitivity of genetic data to the application of conservation questions in glaciated regions where conventional data are uninformative. In Spring 2018 Dr. Berendzen was awarded a UNI Capacity Building Seed Grant and a Small Wildlife Diversity Grant from the Iowa DNR to genotype individuals of rainbow darter using genome-wide SNPs. He will complete the analyses of these data and prepare a manuscript for submission to a top-tier journal. This will contribute valuable research to protect and conserve Iowa's native fauna and will directly benefit the citizens of Iowa by helping maintain the species composition and genetic diversity of a native fish. The establishment of these methods in his laboratory will allow Dr. Berendzen to be more competitive for future external grant proposals.

BULLARD, JULIA, Professor, Music, 19 Years of Service, AY 2020-2021
Title: The Practical Application of Alexander Technique and Mindfulness Meditation to Music Pedagogy and Practice

Dr. Bullard will undertake a study on physical movement and mindful meditation with the purpose of producing a pedagogical resource for music teachers and students. The Alexander Technique is a psycho-physical practice encouraging healthy physical movement; it is well- documented as a successful approach for injury prevention and recovery, and has been extensively used by musicians. To this end, Dr. Bullard will conduct a research study to examine the effectiveness of mindfulness meditation and Alexander Technique lessons on the performance of music students. The resultant study will be submitted for publication to music pedagogy and performance journals, and will also be presented at professional conferences. Dr. Bullard will also use the data from the research study to develop a pedagogical resource, *Mindful Movement for Musicians*, for teachers and students to learn to apply the principles of mindfulness meditation and Alexander Technique

to their musical practice and performance. She will continue working toward her certification as an Alexander Technique teacher. This research will benefit UNI and the citizens of Iowa by contributing important research in the field, disseminating this research in prominent national and international journals and conferences, and by providing the tools and knowledge to use the Alexander Technique and mindfulness meditation techniques with UNI music students, through interdisciplinary collaboration with other departments at the university (i.e. theater and kinesiology), and community engagement outside UNI.

DE SOTO, CATHERINE, Professor, Psychology, 19 Years of Service, Fall 2020

Title: Neuroendocrine Correlates of Behavior

Dr. De Soto's work has two principal goals and is designed to capitalize on existing research infrastructure within the department of psychology: the Psychoneuroendocrinology Laboratory (PNE Lab). This lab allows for the collection and analysis of saliva for a variety of biomarkers related to psychological health and neuroendocrine functioning. The first objective is to write a manuscript for publication using existing data from the PNE lab. The proposed manuscript will examine the relations among neuroticism, social behavior, and selected hormones. This manuscript is a contribution with the potential to bridge research from evolutionary psychology and biology, to research in social and personality psychology. Dr. De Soto's second objective is to collaborate with experts in the area of eating disturbance and design a series of studies to test the hypothesis that certain hormones are associated with exacerbations in symptoms. Investigations of the neural underpinnings of behavior can lead to meaningful predictions about stress reduction and improve functioning of target populations. This research will benefit UNI by increasing recognition through research collaborations and scholarly contributions. Students will participate and use cutting edge lab equipment and techniques.

DOELY, NOAH, IK, Associate Professor, Art, 6 Years of Service, Fall 2020

Title: Primary: A Risograph Book Project

Dr. Doely's PDA research be a semester-long project that culminates in the creation of a risograph book, published in conjunction with the Penumbra Foundation of New York, NY. The three primary objectives of this project are to contribute to contemporary scholarship on color studies within the field of photography, achieve mastery of two less-commonly taught image-making processes (risograph & cyanotype), and publish the first photo book of his career. Despite their analog designations in a digital age, both risograph and cyanotype have experienced a renaissance within the art world in recent years. In 2017, for example, Woolly Press (Asheville, NC) was one of several organizations to explore this revival in the form of a curated exhibition. Dr. Doely's project will have direct benefit for multiple stakeholders. Incorporating new technologies into the photo curriculum at UNI that connect across multiple disciplines will result in added value for students, peer faculty members, and individuals in the broader Iowa community.

DUBORD, ELISE, M., Associate Professor, Languages & Literatures, 5 Years of Service, Fall 2020

Title: Migration and Language in Puerto Rico: The Role of Transnationalism in Shaping Bilingualism

Dr. Dubord's ethnographic research examines the intersection of language and migration in Puerto Rico in the context of increased outmigration to the continental U.S. resulting from economic hardship and natural disasters. Her research focuses on Spanish-English bilingualism among Puerto Ricans as a lens for understanding migration to the continental U.S., return migration to Puerto Rico, and shifting understandings of the link between language and identity. She will use qualitative research (e.g. focus groups, interviews, and participant observation) in

schools, adult education centers, non-profit organizations and research centers. Her analysis will provide a productive point of comparison with her previous research on language and immigration in the United States in dialogue with a growing field of comparative migration studies. She will apply for a Spencer Foundation Small Research Grant on Education and a Faculty Research Grant from the UNI College of Humanities, Arts & Sciences for related research expenses. Dr. Dubord's project in Puerto Rico will inform the content and design of the courses she teaches related to language, immigration, and bilingualism. It will also enhance her work on campus and through campus-community partnerships with immigrants and migrants. Finally, this project will allow Dr. Dubord to expand her research experience abroad, which is essential in her field.

HITLAN, ROBERT, T., Professor, Psychology, 17 Years of Service, Spring 2021

Title: Psychological, Physiological and Biological Implications of Being Ostracized by Ingroup versus Outgroup members Utilizing a Stress and Coping (Challenge versus Threat) Theoretical Framework

Dr. Hitlan's project has two objectives and uses new infrastructure within the Department of Psychology. The Psychoneuroendocrinology (PNE) lab enables collection and analysis of saliva for a variety of biomarkers related to neuroendocrine function, stress and health. The Biometrics lab allows for the collection and analysis of a variety of physiological measurements (heart rate, cardiac output, etc.). Dr. Hitlan's first objective is to complete two manuscripts for publication. The first will examine the relations among social ostracism, neuroendocrine response patterns and psychological health. The second will examine the physiological response patterns related to social ostracism by ingroup and outgroup members. The second PDA objective is to collaborate with experts in the area of social ostracism to design a series of experimental studies of linguistic ostracism. Linguistic ostracism occurs when an individual is ostracized by others speaking a language that the target has extremely limited or no ability to understand. Currently little is known about how such experiences influence activation of internal biological and physiological response systems when compared to other types of ostracism. UNI will benefit from Dr. Hitlan's research by recognition from published research by experts in the field, as well as their willingness to support research collaborations. Iowa citizens would also benefit by having an expert available for consultation and workshops related to social ostracism and the interplay among social ostracism, biological and physiological response patterns, immigration, and intergroup relations.

JERONIMO, HEATHER, R., Languages & Literatures, 5 Years of Service, Spring 2021

Title: The Expanding Spanish Family: Redefining Familiar Relationships in 20th and 21st Century Spanish Narrative Film

Dr. Jeronimo will undertake a book project that investigates non-normative familial relationships in contemporary Spanish literature and film through an examination of the ways in which family members understand and negotiate their identity within the family. The focus on non-normative families—including their physical and sometimes incestuous aspects, the role of literary paternity or maternity in identity formation, incidents of non-biological parenting, family formation in a post-colonial society, and the relationship between masculinity in crisis and parenthood—creates a space for dialogue about the societal and personal effects of familial difference in a hegemonic world. As a critical examination of the contemporary Spanish family, Dr. Jeronimo's project engages in an emerging scholarly conversation that creates research opportunities for UNI students and increases interdisciplinary research on the topic of the family through connections to domestic and international family scholars.

LIANG, BINGQING, Associate Professor, Geography, 6 Years of Service, Spring 2021
Title: Urban Landscape Characterization Using Hyperspectral Imaging

Dr. Liang's project explores the capabilities of the technology of *hyperspectral imaging* (HI) to characterize detailed urban landscape features based on the campus of the UNI in Cedar Falls. Hyperspectral imaging (HI) is a rapidly growing knowledge and application area in remote sensing and one of the most critical skills needed by future employees in remote sensing industry. A greater understanding of HI, including collection, analysis and interpretation of HI data for different uses, will be an important priority over the next few years. Dr. Liang's research aims to 1) detect tree and building shadows presented in a hyperspectral image; 2) extract road and roofing materials by integrating the hyperspectral and thermal images; and 3) incorporate the hyperspectral image in reducing volume of the Light Detection and Ranging (LiDAR) data, an emerging dataset commonly used to generate three-dimensional (3D) models for urban environments. Knowledge and results from Dr. Liang's project will be disseminated by conference presentations, publication in peer-review journals and development of curriculum.

SKAAR, NICOLE, R., Associate Professor, Educational Psychology, Foundations and Leadership Studies, 8 Years of Service, Spring 2021
Title: An Investigation of "Counseling as a Related Service" Usage across the United States

Dr. Skaar's project is designed to investigate the use of "counseling as a related service" in Iowa and across the United States. The Individuals with Disabilities Education Act (IDEA) provides special education services for all public school students with educational disabilities. Students who have emotional and behavioral disabilities often require counseling, and IDEA was written to ensure these students are provided counseling as part of their Individual Education Plan (IEP). Dr. Skaar aims to gather three types of data for this project. First, she will gather survey data from a national sample of school psychologists asking how often they or their colleagues add "counseling as a related service" to IEPs and what this service looks like. Second, she will interview school psychologists about the students for which counseling is provided and who provides these services for students. Finally, she will review a sample of Iowa IEPs and code the use of "counseling as a related service". This project will benefit UNI by informing its school psychology and special education programs and increasing recognition as a center for advocacy and scholarship of school-based mental health services. The resulting data can inform changes to public policy and the way IDEA and "counseling as a related service" is interpreted across Iowa.

SOANS, FRANCESCA, Associate Professor, Communication Studies, 14 Years of Service, AY 2020-2021
Title: The North End

Dr. Soans' PDA project is to produce *The North End*, a 60-minute video documentary on the history and meanings of the "Triangle" neighborhood, an area located in the north of Waterloo, Iowa, within the larger histories of African Americans in Waterloo and the state. This project is the third episode in a documentary series *Waterloo: A History of Place* that offers a unique perspective on Waterloo's diverse histories. Focusing on different public spaces, ranging from department stores to neighborhoods, Dr. Soans' groundbreaking multi-part series explores the memories of Waterloo's many communities, thus tracing a history of the city from the Meskwaki settlements to the present time. Her goal for this project is to engage diverse communities in the act of understanding and interpreting history and to offer an exploration of the intersections between history, memory and identities. As a community history project, it contributes to the knowledge and understanding of local histories and communities, in particular the African-American community. It also fosters professional mentorship opportunities for students and

contributes to curriculum development. It will further serve as an important educational resource regarding the history of Waterloo and the history of African-Americans in Iowa.

STEINTHORSDOTTIR, OLOF, B., Associate Professor, Mathematics, 4 Years of Service, Fall 2020

Title: Cognitively Guided Instruction in International Settings

Dr. Steinhorsdottir's overarching research goal is to determine if the typology of story problems and the framework on development of students' strategies reported by Cognitively Guided Instruction (CGI) is generalizable to students in a different cultural and linguistic educational setting than the United States. Approximately 50 students will be interviewed while solving different story problem structures involving addition, subtraction, multiplication and division to examine the underlying mathematics inherent in the strategy. By investigating which strategies are used on problems varying in complexity, Dr. Steinhorsdottir can make inferences on students' development stages. The result of his study will then be compared to students' thinking reported by the existing CGI research to identify similarities and differences. His research will provide a deeper understanding of the effects of student culture and language on the development of mathematical understanding which will also allow improved instructional models for Iowa's diverse communities of learners. Dr. Steinhorsdottir's will provide UNI pre-service teachers with enhanced tools to support the mathematical development of students who are English language learners or are from different cultural backgrounds.

SWAZO, ROBERTO, Professor, School of Applied Human Sciences, 13 Years of Service, Fall 2020

Title: Bilingual Microfictions, Quotes, Sayings, Morals with Accompanying Interventions and Strategies for Counselors, Psychologists, and Social Workers

Dr. Swazo's project is to complete a book manuscript that will undergo the third and final stage of revisions by the board of editors from Francis and Taylor: Routledge that will be destined for publication. His book prospectus has passed the first stage of reviews by Francis and Taylor: Routledge editors and it will be sent out to external reviewers for the second phase of additional feedback prior to signing the contract. This book is an extension of Dr. Swazo's previous book entitled: *The bilingual counselor's guide to Spanish: Basic vocabulary and interventions for the Non-Spanish speaker*, published in 2013. Dr. Swazo's new book incorporates technology by adding an online webpage with ancillary materials and resources for the reader. The area of bilingualism, strategies, and interventions for non-native Spanish speakers is a new area in which there is limited work accomplished. Most of the work conducted in the area of bilingualism within the disciplines of counseling, psychology, and social work is primarily theoretical in nature. Dr. Swazo's project creates a niche that allows practitioners to implement theoretical concepts into their clinical experiences that will benefit mental health practitioners (i.e. mental health, school counseling, social work, psychology) in the state of Iowa. By disseminating this research at counseling training programs, Iowa professional conferences, schools, and mental health agencies for training purposes, Dr. Swazo's work impacts not only UNI students, but also counseling practitioners throughout the state of Iowa.

ZHU, JIN, Professor, Technology, 14 Years of Service, Fall 2020

Title: Cyber Physical System for Crop Stress Monitoring and Disease Detection in Smart Farming

Dr. Zhu's project involves implementing a prototype of the Cyber Physical System (CPS) device to monitor crop and environment conditions in real-time. This low-cost, small size device will be self-powered through a flexible thin film solar panel. The collected sensing data can be used to determine crop stress and detect diseases for early intervention. By integrating big data, artificial

intelligence, smarting monitoring and advanced communication technologies together, Smart Farming has the potential to make significant impact on the development of agriculture globally. It may not only improve the productivity and operations of farms, migrate risks, but also enhance environmental quality and system sustainability. Dr. Zhu's research results will be useful for understanding the potential of CPS applications for smart farming in Iowa and benefit the agriculture business. Dr. Zhu will seek external grants from federal or state funding agencies to support further research. UNI will benefit from her research by providing student research opportunities as well as the procurement of external grant funds.

IOWA STATE UNIVERSITY

BHATTACHARYA, SOURABH, Associate Professor, Mechanical Engineering, 7 years of service, 2020-2021 academic year

Title: From Multi-agent Learning to Mechanism Design for Autonomous Systems

Professor Bhattacharya will use the proposed assignment to expand his expertise in game-theoretic analysis based on developments in machine learning and big data analytics. The results will be applicable to a variety of areas, including cybersecurity, power grids, robotic networks, gene-regulatory networks and agriculture, and will be used to train Iowa State engineering students.

CHAPELLE, CAROL ANN, Distinguished Professor, English, 34 years of service, 2020-2021 academic year

Title: Technology and Second Language Learning

Professor Chapelle proposes an assignment to complete the research for, and begin writing, a book manuscript on technology mediated second language learning, including how new technologies offer new opportunities for learning. As the second edition of her book on the subject, Computer Applications in Second Language Acquisition will be used by researchers and graduate students in Iowa and beyond who investigate language learning.

CHYZH, OLGA, Assistant Professor, Political Science and Statistics, 4 years of service, 2020-2021 academic year

Title: Modeling Structural Selection in Disaggregated Event Data

Professor Chyzh will develop a statistical approach to reduce bias in statistical data related to political parties, insurgents, domestic terrorist groups and protester campaigns/movements. This work will result in multiple papers, and will be disseminated broadly through statistical packages for open-source software.

CIARDO, GIANFRANCO, Professor, Computer Science, 5.8 years of service, 2020-2021 academic year

Title: Improving, Generalizing, and Widening the Applicability of BDDs

The introduction of binary decision diagrams (BDDs) 30 years ago revolutionized many aspects of computing, especially those where many possibilities must be considered to solve a problem. Professor Ciardo's proposed assignment will extend BDDs to address numerical problems, further improving the efficiency of algorithms required to use decision diagrams in practical applications. The results will be shared through journal articles, and be consolidated into a textbook useful for students and practitioners.

COFFELT, TINA A, Associate Professor, English, 7 years of service, 2020-2021 academic year

Title: Sexual Communication Books: Interpersonal Sexual Communication Across the Lifespan and Handbook of Sexual Communication Research Measures

Professor Coffelt will use the proposed assignment to complete two book projects. The first will explore interpersonal sexual communication processes as individuals develop from children to older adults. The second will collect and evaluate research measures used by assess predictors and outcomes of sexual communication. The books will be used to by interdisciplinary researchers in Iowa and beyond.

DORIUS, CASSANDRA J, Assistant Professor, Human Development and Family Studies, 6 years of service, full academic year

Title: Advancing ISU's Data Science Program in Support of Rural Communities

Professor Dorius' proposed assignment will support the development of a Data Science for the Public Good training program at Iowa State that empowers data-enriched local governance, where information is shared among community leaders, officials, and residents to aid evidence-based policy making.

DORIUS, SHAWN, Associate Professor, Sociology, 6 years of service, 2020-2021 academic year

Title: Measuring and Monitoring Public Perceptions of the U.S., China, and the US-China Trade War

Professor Dorius proposes an assignment to collaborate with researchers at the Center on Contemporary China (CCC), building data systems that allow for real-time monitoring of public attitudes toward China in the U.S. and other countries, and meeting with China scholars at the Woodrow Wilson School of Public and International Affairs. Dorius is applying for funding for his assignment through the CCC and the Institute for Advanced Studies, both at Princeton University.

EVANS, JAMES WILLIAM, Professor, Physics and Astronomy and Mathematics, 28 years of service, Spring 2021

Title: Predictive Multiscale Modeling of Physical Phenomena from Nano- and Meso-Scales

Professor Evans will conduct extensive research on applications in traditional surface science (thin film growth and catalytic reactions on extended flat surfaces under controlled conditions) during his proposed assignment. This work will also aid in the development of interdisciplinary modeling courses at Iowa State.

GABIAM, NELL MILAGNY, Associate Professor, World Languages and Cultures and Political Science, 8 years of service, Fall 2020

Title: We Have Now Lost Two Homelands: Palestinians Displaced by the War in Syria

Professor Gabiam's project focuses on Palestinians who have been rendered refugees as a result of the war in Syria, and assesses the significance of Europe's new status as a major land of asylum for Syro-Palestinians. The work is expected to result in a book, and will benefit Iowa State students by producing expertise on a timely global issue.

GANSEMER-TOPF, ANN MARIE, Associate Professor, School of Education, 7 years of service, Spring 2021

Title: Investigating Effective Strategies for Translating Research into Policy

Professor Gansemer-Topf proposes an assignment to review current literature and discussions regarding higher education policy development and implementation; explore organizations' roles in influencing state and federal policy; and identify effective strategies for higher education researchers. The results will benefit Iowa State, its School of Education, and the State of Iowa.

GILBERT, STEPHEN, Associate Professor, Industrial and Manufacturing Systems Engineering, 12 years of service, 2021 calendar year

Title: Culturally-Oriented Human-Agent Teams (COHAT)

Professor Gilbert will study how humans interact with artificially intelligent software agents, such as Alexa and the Tesla autonomous driver, to determine what makes the agents trustworthy, how

they should communicate, how they should adapt to humans and what makes them good teammates. Gilbert has applied for a Fulbright Scholar Award to support his work.

GUAN, YONG, Professor, Electrical and Computer Engineering, 17 years of service, 2020-2021 academic year

Title: Collaboration with HKU/ASTRI on IoT Security/Forensics and Course/Textbook Developments

Professor Guan, Cyber Forensics Coordinator at Iowa State's Center for Statistics and Applications in Forensic Evidence, will visit Hong Kong University and the Hong Kong Applied Science and Technology Research Institute during his assignment. Guan's work will include completing the writing of a digital forensics textbook, developing cybersecurity course modules, expanding his research program and establishing new international collaborations.

HASHEMI, NICOLE, Associate Professor, Mechanical Engineering, 8 years of service, 2020-2021 academic year

Title: A Microfabricated 3D Cellular Platform to Analyze the Physiological Functions of the Human Placenta

Professor Hashemi will serve as a visiting scientist at the Massachusetts Institute of Technology during her assignment, working with colleagues to develop "organ on a chip" technology that mimics the nutrient/waste transfer between maternal blood and fetal blood. This technology would enable researchers to more accurately evaluate responses to pharmaceutical therapy.

JIA, YAN-BIN, Professor, Computer Science, 20 years of service, Spring 2021

Title: Control of a Robotic Arm to Use Hand Tools

Enabling robots to manipulate hand tools will allow them to take on a wide range of tasks, from household chores to medical procedures and military operations. Professor Jia will use the proposed assignment to study how to control a robotic arm and hand to perform fastening tasks using a screwdriver and wrench, including mapping human tool skills, which will lead to external grant applications.

KONG, SONG-CHARNG, Professor, Mechanical Engineering, 14 years of service, Fall 2020

Title: Advancing Computational Capabilities to Predict Biofuel Spray Dynamics

Professor Kong proposes an assignment to develop a computational model to predict spray dynamics in biofuels, a critical factor that determines how well the fuel burns in an engine. The results will be used to enhance the development of new biofuels to achieve better fuel-air mixing for clean combustion, which in turn will enhance Iowa's biofuel industry.

KOTHARI, SURAJ C, Professor, Electrical and Computer Engineering, 35 years of service, Fall 2020

Title: A Study of Systems of Massive Connections with Implications for Cybersecurity

Professor Kothari will use assignment to write a book based on technology he has developed for creating, story, querying, analyzing, and visualizing mathematical models of software, which was funded by the Defense Advanced Research Projects Agency (DARPA). Kothari will also broaden the scope of his research to show how software works as a system of massive connections, with will benefit a required course in Iowa State's software engineering program.

KUSOW, ABDI M, Professor, Sociology, 10 years of service, 2020-2021 academic year
Title: Contributions to International Migration: African Immigrants in the United States and China

Professor Kusow will use the proposed assignment to study three areas of “south-south” international migration: examining state structures and capacity for accepting immigrants; documenting the experiences of African immigrants to Guangzhou, China; and publishing a paper on vulnerability and perceived surveillance among emigrants to China.

LEE, SOJUNG, Associate Professor, Apparel, Events, and Hospitality Management, 7 years of service, Spring 2021
Title: The Impact of Volunteers on Sustainable Rural Community Development: A Case of Rural Festivals in South Korea

Rural festivals can be important contributors to sustainable community development. Professor Lee will develop a research model to examine three such festivals in South Korea during her proposed assignment, and compare them to rural festivals in Iowa to identify differences between the two cultures, and to validate the research model. The results will be incorporated into future research and curricular opportunities.

LESLIE, THOMAS, Morrill Professor, Architecture, 19 years of service, Spring 2021
Title: Chicago Skyscrapers: 1934-1984

Professor Leslie’s proposed book project – to be published by the University of Illinois Press – will demonstrate how Chicago’s 20th century skyscrapers are evidence of post-WWII technological, socioeconomic, political and demographic changes, as well as how they reflect negotiations between economic and aesthetic desires, and material and social realities.

LEVIS, JOHN M, Professor, English, 19 years of service, Fall 2020
Title: Innovative, Research-Informed English Pronunciation Instruction: Digital Pronunciation Teaching and Teacher Education for Suprasegmentals

Professor Levis will use the proposed PDA to develop an integrated digital student textbook/teacher’s guide for teaching pronunciation to nonnative speakers of English; and to develop a framework for innovative computer-assisted language learning materials for pronunciation teaching. The materials will be tested in various contexts, including in Iowa.

LONERGAN, ELISABETH HUFF, Professor, Animal Science, 21 years of service, January – June (6 months)
Title: Faculty Professional Development Improvement Assignment to Establish Cutting Edge Muscle Proteomics Techniques and Improve Research Dissemination Open Access Journals

Professor Lonergan will use her assignment to enhance her skills in proteomic analysis of skeletal muscle and early postmortem beef, and to develop an open access journal with Iowa State University Digital Press to publish key work in meat science and muscle biology. This work will benefit Iowa beef producers, and also provide an opportunity to attract high-quality Ph.D. students.

LONERGAN, STEVEN MICHAEL, Professor, Animal Science, 21 years of service, January – June (6 months)
Title: Bringing Leading Edge Research and Teaching Ideas to Iowa State University – Development of New Proteomic Technologies for Application in Animal Science Research and Investigation of New Educational Opportunities for Animal Science Students

The proposed assignment will be focused on expanding Professor Lonergan's expertise in muscle and meat protein chemistry and proteomics, including detection and modification of protein modifications, determination of protein biomarkers for economically important traits, and methods to analyze large datasets. This work will ensure modern, relevant education for undergraduate and graduate students in animal science disciplines.

MARSHALL, JOANNE M, Associate Professor, School of Education, 16 years of service, 2021 calendar year

Title: Definitions and Models of Culturally Responsive Teaching Practices in Namibian Teacher Preparation

Professor Marshall's proposed assignment, which includes a Fulbright Scholar teaching and research grant application, will examine the evolving education system in Namibia, which gained its independence in 1990. Marshall will bring best practices in culturally responsive teaching back to Iowa State's teacher preparation program, as well as develop collaborative research and study abroad programs.

MCCORMICK, JAMES M, Professor, Political Science, 44 years of service, Fall 2020

Title: Canadian-American Relations in a Changing Global Order

Professor McCormick will serve as a visiting fellow at the Canadian Global Affairs Institute during his proposed assignment, gaining a greater understanding of important aspects of Canadian-American relations, including the impact of the "America First" policy, the revision of the NAFTA accord, and actions Canada has planned to review the rule-based international order. The results will be used to enhance foreign policy courses at Iowa State.

MONTAZAMI, REZA, Associate Professor, Mechanical Engineering, 8 years of service, Fall 2020

Title: An International Collaborative Effort to Understand Phase Change Mechanism in Segmented Ionenes

Professor Montazami will the assignment to study soft phase change materials, including how they operate at a molecular level, and how they respond to stimuli. The results will be used to develop a soft materials program at Iowa State, including new undergraduate and graduate courses on the mechanics of materials.

MOSCHINI, GIANCARLO, Professor, Economics, 32 years of service, Spring 2021

Title: Innovation and Market Power in U.S. Agriculture

Professor Moschini will focus on the development and diffusion of genetically engineered (GE) crop varieties during his proposed assignment, including how GE products are priced, conducting an empirical analysis of the U.S. seed industry, and studying the effects of licensing and cross-licensing of GE traits between otherwise competing firms.

NAGLE, CHARLES LEO V, Assistant Professor, World Languages and Cultures, 4 years of service, Fall 2020

Title: Identifying the Motivational Factors that Predict Language Learning Effort and Achievement

Professor Nagle will use the proposed assignment to building a quantitative model of the motivational factors that influence achievement-related choices and behaviors in second language learning. The results will improve the Spanish curriculum at Iowa State, helping students develop the complex linguistic and cultural skills needed to work in the diverse communities of Iowa.

NIEMAN, MARK, Assistant Professor, Political Science, 4 years of service, 2020-2021 academic year

Title: International Order and Major Power Competition

Major power competition is a function of both domestic processes and international action-reaction processes in which nations compete for spheres of influence. Professor Nieman will use the proposed assignment to analyze data, draft case studies and complete a book manuscript from his research on major power competition.

PRELL, SOEREN, Professor, Physics and Astronomy, 17 years of service, Fall 2020

Title: Search for Evidence of New Physics in B Decays with the Belle II Experiment

Professor Prell will search for evidence of new elementary particles and forces during his proposed assignment, which would be spent at the KEK Laboratory in Tsukuba, Japan. Prell will generate new high-intensity data, conduct research on already recorded data and establish new collaborations with colleagues.

RAMAMOORTHY, ADITYA, Professor, Electrical and Computer Engineering, 13 years of service, Fall 2020

Title: Exploring Industrial Collaborations on Distributed Computing Algorithms

Professor Ramamoorthy will use the assignment to study how distributed cluster computing platforms are used in industrial settings to process large amounts of data. Ramamoorthy's work will feature collaborations with industrial and government partners, including Facebook, Google and the Argonne National Laboratory.

RAMASWAMI, SRIDHAR N, Professor, Marketing, 32 years of service, Spring 2021

Title: Research and Development Responsiveness to Market Opportunities

Professor Ramaswami proposes an assignment to visit colleagues at the Indian School of Business in Hyderabad, where he will exchange ideas with leaders in its Center for Innovation and Entrepreneurship, explore research collaborations with the Center for Artificial Intelligence, develop a new research stream, and recruit Ph.D. students to Iowa State.

ROSA, JOSÉ ANTONIO, Professor, Marketing, 4 years of service, Fall 2020

Title: Startup Impact Readiness Program – Education and Performance Assessment

Professor Rosa will work at the Ludwig-Maximilians-Universität Institute for Innovation Management and Entrepreneurship Center during his proposed assignment, to develop and implement a Startup Impact Readiness Program, which will help startups consider their economic, social and ecological impacts as they launch.

SADOW, AARON DAVID, Professor, Chemistry, 14 years of service, Spring 2021

Title: Sustainability in Catalytic Chemistry and Polymers

Professor Sadow proposes an assignment to assess the potential of chemical upcycling to address the global challenge of plastic waste. Sadow will collaborate with colleagues at the University of Pisa to develop processes for polymer upcycling – using energy from Iowa wind turbines – that create new manufacturing opportunities in Iowa.

SCHALINSKE, KEVIN LEE, Professor, Food Science and Human Nutrition, 20.8 years of service, Spring 2021

Title: Role of B-Vitamins in the Prevention and Treatment of Chronic Disease

Many Iowans have sub-optimal B-vitamin status, owing both to dietary habits and genetics, and are more susceptible to chronic disease. Professor Schalinske will use the proposed assignment to conduct clinical nutrition studies on human subjects that influence public policy recommendations to optimize human health, and secure federal research funding.

SCHNEIDER, IAN CHRISTOPHER, Associate Professor, Chemical and Biological Engineering, 10.8 years of service, Fall 2020

Title: Developing Collaborations in Skin Immunology and Regenerative Medicine that Leverage Strengths in Engineering Biophysical Aspects of the Cell Microenvironment

Professor Schneider will conduct research on transdermal (through the skin) delivery systems for vaccines and other biomaterials to improve allergen tolerance and enhance wound healing. Schneider's work will enhance Iowa State's biomedical engineering curriculum, and support the work of the university's Nanovaccine Institute.

SHENK, LINDA, Associate Professor, English, 14 years of service, Spring 2021

Title: Minding the Gaps, S(t)imulating New Climate Futures: Where the Literary Humanities Geosciences, and Community Voices Converge

Professor Shenk will study sophisticated climate change simulations that allow scientists to become powerful storytellers to convey future climate conditions to the broader public during her proposed assignment. Shenk will also complete two chapters, and research the third chapter, of a book project on underserved youth in the Mississippi Delta.

SHIRTCLIFF, BENJAMIN A, Assistant Professor, Landscape Architecture, 5 years of service, Fall 2020

Title: City Leisure and Play: Advancing Applied Research and Scholarship into Adolescent, Inclusive Design

Professor Shirtcliff will use the proposed assignment to complete a book project on youth-inclusive urban design practices, as well as apply his research at multiple scales, from small, Midwestern towns to large cities. Shirtcliff's scholarship will also result in conference presentations and peer-reviewed publications.

SONG, GUANG, Associate Professor, Computer Science, 13 years of service, Spring 2021

Title: Efficient and Accurate Computational Protein Dynamics Studies of Very Large Structure Complexes

Computational studies of protein dynamics can provide deep insights into the functional mechanisms of proteins and protein complexes. Professor Song will focus the proposed assignment on the best models for these studies, tailored to the sizes of these complexes, to achieve the highest possible accuracy. This work has implications for understanding diseases and drug development, which will benefit the State of Iowa and society in general.

SQUIRE, MITCHELL, Professor, Architecture, 22.8 years of service, Fall 2020

Title: Self-Portraits on the Socio-Sexual Effects of Extractive Economies and the Material Geophysics of Race

Professor Squire will contribute to the emerging field of performing architecture by creating a series of self-portraits and performances that explore the socio-sexual effects of extractive economies – a concept that refers to a nation that derives its productivity from non-renewable resources – on the Black body. Squire will also serve as a distinguished visiting professor at the City University of New York during his assignment.

STEGEMOLLER, ELIZABETH, Associate Professor, Kinesiology, 6 years of service, Fall 2020

Title: Project 1: Improving and Expanding Access to Singing Groups for Parkinson's Disease; and Project 2: Improving the Quality and Deliver of the Online Course, Neuroscience and Music

Professor Stegemoller will use the proposed projects to extend her research on the effects of singing in Parkinson's disease by establishing international connections and expanding her virtual singing program. Data gained from the assignment will lead to the design and implementation of clinical trials (project 1), and certification of her online course through Quality Matters (project 2).

TIAN, JIN, Associate Professor, Computer Science, 17 years of service, 2020-2021 academic year

Title: Causal Machine Learning and Decision-Making

Professor Tian will spend his proposed assignment at Columbia University, working with colleagues to develop a machine learning theory for decision-making that is both predictive and explanatory. This work addresses a major issue with black-box models, including deep learning, that are very successful in predictive tasks but have little explanatory power. The results will lead to grants and improvements to ISU machine learning courses.

URBATSCH, ROBERT, Professor, Political Science, 13 years of service, Spring 2021

Title: Borderland Political Behavior

Living within easy reach of another political jurisdiction (such as another state or country) changes a host of political and economic incentives. Professor Urbatsch's proposed assignment will examine how this phenomena affects what policies borderland residents support, and how they engage with political processes by voting or contributing to campaigns.

VASWANI, NAMRATA, Professor, Electrical and Computer Engineering, 14 years of service, Spring 2021

Title: Statistical Machine Learning in Health Informatics and K-12 Mathematics Education

Professor Vaswani will use their expertise in statistical machine learning to understand challenges related to health informatics and evidence-based medicine, and to improve K-12 math education. The assignment includes collaboration at the Mayo Clinic, University of Iowa and the U.S. Centers for Disease Control and Prevention.

WEBER, ERIC S, Professor, Mathematics, 16 years of service, Fall 2020

Title: Harmonic Analysis and Machine Learning

Professor Weber will travel to University of Colorado and the National Corporation for Atmospheric Research during his proposed assignment, establishing research collaborations to support a new project at Iowa State that will develop machine learning techniques to diagnose

severe wind occurrences. This work will also support curriculum in Iowa State's new undergraduate data science program.

WEI, MEIFEN, Professor, Psychology, 17 years of service, 2020-2021 academic year
Title: Considering the Role of Culture to Understand the Emotion Regulation Process

Professor Wei's research program focuses on coping with minority related stress. Wei will sue the proposed PDA to expand her research internationally, working on scale development projects on emotion regulation and culture; and working on funded international projects assessing the effectiveness, and how change occurs, in emotional cultivation group counseling process.

YOUNGS, CURTIS R, Professor, Animal Science, 30 years of service, January – May (4 months)
Title: Livestock Embryo Transfer: Science and Application

Professor Youngs will write a textbook on the proper use of embryo transfer for the production of safe and nutritious animal-sourced foods during his proposed assignment. The text will be used not only for Iowa State undergraduate courses in the subject, but also as a much needed update for scientists, teachers and students across the globe.

ZHANG, SHENGLAN, Assistant Professor, World Languages and Cultures, 8 years of service, 2020-2021 academic year
Title: A Dualism Method of Teaching Chinese Characters: Using Multimedia Technology and Augmented Reality

The biggest challenge for instructors and students learning Chinese as a second language is teaching and learning Chinese characters. Professor Zhang's assignment will focus on using online modules, including multimedia and augmented reality, that benefit U.S. students studying Chinese. The modules will be piloted in courses at Iowa State, and in France, leading to peer-reviewed publications.

ZHANG, ZHU, Associate Professor, Information Systems and Business Analytics, 5.5 years of service, Fall 2020
Title: Advancing Frontier of Business AI Research

Professor Zhang will use his proposed assignment to conduct collaborative research in business-oriented artificial intelligence at Microsoft Research in Redmond, WA. The results of this work will be shared through publications in premier journals, and integrated into business analytics courses in Iowa State's Ivy College of Business.