Anita Batisti, D. Frank Hsu, Ying Mao: *Watson App Cognition System Training for Community Schools in the Bronx*

Abstract:

This interdisciplinary research project provides a series of training sessions on the Watson App Cognitive System for parents and social workers at Community Schools in the Bronx. The codirectors of this project are from diverse backgrounds: Dr. Anita Batisti in Education; Dr. D. Frank Hsu in Cognitive Computing; and Dr. Ying Mao in Software Engineering.

The Watson app, previously designed and developed by a partnership between Graduate School of Education (GSE) and Department of Computer and Information Science (DCIS), is a cognitive system for users to navigate social health resources for public schools. It consists of a base corpus with over 100 Q&A's in four categories: Healthcare, Living Essentials, Mental Health and Community.

We seek initial funding for the training of stakeholders as well as the testing and refining of the app system. In practice, we will start with elementary school PS 85, our partner community school during the design and development phase of the Watson App, with its newly established Watson Cognitive Computing Center (WC3). During the project period, the Fordham team will work closely with the team at PS 85 on training and testing the App system. Regular training sessions will be conducted for groups of parents, and social workers. The base corpus will be tested and updated with new Q&A's.

Our project has great potential: (a) to enhance the research capability in app system design, Q&A technology, database model, information retrieval, and cognitive computing; (b) improve Fordham's external visibility in the Bronx, in NYC, and the nation; and (c) for future grant support by funding sources in government and industry.

Tiedan Huang, Chun Zhang, Yi Ding: *Supporting Match Achievement and Self-Regulation Through Fostering Family-School Collaboration and Parent Engagement (SMART F^2 SCOPE)*

Abstract:

We propose a randomized controlled trial to evaluate the impact of parent engagement intervention and *computer-assisted, personalized home learning* (CAPHL) on student math fluency and self-regulation in a high-performing independent charter school in New York City's most disadvantaged neighborhood. The parent engagement component features *parent-teacher conjoint consultation.* The CAPHL component capitalizes on the cognitive load theory and provides frequent practice opportunities and progress monitoring for participating students to master basic math facts competencies. A rigorous evaluation, incorporating a randomized controlled trial design, will generate *evidence of effectiveness* by demonstrating improved math achievement and self-regulation within the experimental group. Parent-level impacts in terms of parent-teacher relationship and parent competency in supporting children's self-regulated academic behaviors will be reported as well. Findings will contribute to the development of policies and practices to (a) foster purposeful parent-child interactions that are directed toward

academic learning and behavioral outcomes; and (b) promote individual disadvantaged young learners' self-regulation, math proficiency, and narrowing of the achievement gap. Positive results from this project will provide rigorous evidence that meets What Works Clearinghouse's *standards without reservations* and will subsequently place us in a very strong position in our future application of the Early-Phase Education Innovation and Research grant. Which we attempted last year.

Lauri Goldkind, Andrew Simons, Mamello Thinyane: *#DS4HSO: Data science for human service organizations*

Abstract:

From algorithms that can predict academic success and school failure to chatbots that can sort and prioritize clients using "regular" English, the technology and data revolution is undeniably knocking on the door of our human services agencies. While the notions of an information ecology or information ecosystem have been discussed in academic circles since the 1980s, technological developments such as the Internet of Things (IoT), ubiquitous computing and Big Data have all served to accelerate interest in this arena. Paradoxically, while data focused demands on human services has increased exponentially over time, commensurate coursework, funding and professional development preparing nonprofit leaders for the challenges of an information ecosystem have not kept up. Many nonprofits lack the capacity to leap from collecting and reporting data to implementing data science tools for more sophisticated predictions. Similarly, the tools of cybersecurity and risk management in the digital space are often far beyond the capacity of the average community based organization. The aim of the #DS4HSO project is to explore data science and cybersecurity needs of nonprofits: first – scoping study of existing literature; followed by a qualitative study of leader's knowledge of data science leading towards the road map for a larger international quantitative exploration mapping knowledge and use of data science tools in the nonprofit human services with the goal of understanding if these tools are being used for sustainability or service improvement purposes.

Evon Hekkala, Claire Gherini: ***The History, Art and Science of Sacred Crocodiles***

Abstract:

Our goal for this project is to integrate historical archival narratives, cultural representations and modern genomic tools to develop new hypotheses about biological attributes of species and their shifting value in human cultures. We intend to develop collaborative undergraduate research teams (Biology/History) that will promote interdisciplinary thinking and leadership in STEAM (Science, Technology, Engineering, Art and Math) and whose perspectives are solidly grounded within an historical framework. For this proposal we are limiting the focus to crocodilians, a group of animals which figure prominently in cultural and artistic representations in communities around the globe. Cultural attributions of power, fertility and healing and information held in pictorial and archival cultural heritage collections will be combined to explore the value of these materials as sources of novel hypotheses. For example, historical documents, recipes and paintings depicting crocodilians in apothecary shops predates studies indicating that plasma from crocodile blood contains antimicrobial peptides effective against pathogens by several centuries.

We will assay genomic data from crocodilians in sacred caves, lakes, tombs and collections in Africa, Europe and the Caribbean to test how cultural and artistic representations of these species fit with empirical data.

Jennie Park-Taylor, Ralph Vacca: ***Reimagining Counterspaces: Using Participatory Design to Explore the Role of Technology in Engaging Underrepresented Racial Minority College Students***

Abstract:

For underrepresented racial minorities (URMs) at predominantly white institutions (PWIs), campus engagement and retention continue to be a challenge. Research on engagement and retention the critical role of face-to-face or invivo relationships with co-ethnic peers through counterspaces, cultural organizations, and peer mentoring groups. However, research has yet to explore the benefits of participatory design approaches to better understand the ways in which technology may facilitate or even simulate counterspaces and other support structures for URMs both virtually and in-person. As a result, despite social media platforms, tools for self-expression, and ways in which technology connects to analog in-person connections, we may not be building on existing behaviors and leveraging cultural youth practices around technology. Our project remedies this gap by engaging URMs in the design of their own solutions situated in their lived experiences, motivations, and existing cultural practices. We are applying to the Interdisciplinary Research Grant in order to conduct a series of participatory design workshops, and engage in an analysis of the prototypes generated through those workshops, the meaning participants attribute to their designs and the ways in which engagement in these workshops influences their experiences as a Fordham URM student.