2018 iSchool Research Fair

6:30-8 p.m., February 22

University of Washington | Husky Union Building, South Ballroom

Information School
UNIVERSITY of WASHINGTON

ischool.uw.edu/researchfair

Research Fair

The Research Fair is our annual event for sharing and celebrating the work of our vibrant research community. We hope you will enjoy exploring how iSchool research is pushing boundaries, responding to significant real-world challenges, and making a difference in the lives of people and communities. At the iSchool, WE MAKE INFORMATION WORK.

This year, we also have the great pleasure of welcoming Dean Anind Dey to his first iSchool Research Fair and celebrating the future of our flourishing research enterprise under his leadership.

Agenda

6:00–6:30 p.m.: Dean's Reception

6:30–8:00 p.m.: Open poster session and interactive demonstrations

Research Areas

- Data Science and Analytics
- Digital Youth
- Health and Well Being
- Human Computer Interaction
- Indigenous Knowledge
- Information and Society
- Learning Sciences
- Libraries and Librarianship
- Sociotechnical Information Systems

Current Areas of Strategic Visibility

- Data for Social Good
- Future of Libraries
- Human-Computer Interaction for the Social Good
- Native North American Indigenous Knowledge

Research Groups

- Code & Cognition Lab
- DataLab
- Digital Youth
- GAMER Group
- iMed
- Indigenous Information Research Group (IIRG)
- Knowledge Organization
- Mobile + Accessible Design (MAD) Lab
- Social Media (SoMe) Lab
- Technology & Social Change Group (TASCHA)
- User Empowerment Lab
- Value Sensitive Design (VSD) Research Lab

Affiliated UW Groups

- DUB Group
- Tech Policy Lab

Posters and Demonstrations

1. Facet Analysis of Anime Genres: The Challenges of Defining Genre Information for Popular Cultural Objects

Hyerim Cho, Thomas Disher, Wan-Chen Lee, Stephen A. Keating, and Jin Ha Lee

Anime, as a growing form of multimedia, need a better and more thorough organization for the myriad terminologies unique to the genre. Existing studies show patrons' desire to search and get recommendations for anime. However, due to often confusing or inaccurate usage of terms, searching and acquiring recommendations remains challenging. In this study, we conducted a facet analysis of anime genre terms that are currently used in 36 anime-related databases and websites. Using a card sorting method with an inductive approach to the 1,704 terms collected, we identified and defined 9 facets and 153 foci terms that describe different genres of anime.

2. AR, VR, and the Future of Gaming

Jin Ha Lee and the GAMER Group

We present four projects involving Augmented Reality (AR) games, Virtual Reality (VR) games, and game accessibility metadata as we envision the future of gaming and its impact on community interactions, ethics, learning, and accessibility. First, we examine how the social interactions occur in AR games, specifically investigating the raids in Pokémon GO. Second, we present our investigation on the ethical issues in designing and playing AR games via case studies of Pokémon GO and Ingress. Third, we present our project with Washington State Library and Oculus on implementing and evaluating VR-based programming in six public libraries in Washington state for informal learning and community engagement. Lastly, we present our project on creating a standard metadata schema to represent accessibility metadata on video games to inform players with various impairments. These projects are led by Dr. Jin Ha Lee and Dr. Jason Yip from the GAMER Group, in addition to Dr. Adam Moore, Dr. Negin Dahya, Arpita Bhattacharya (HCDE) and John Porter (HCDE).

3. Eco Friendly: Outcomes of an Environmentally Themed Online Game on Middle School Learners

Travis Windleharth and John Krajewski (Strange Loop Games)

This research project explores environmental attitude changes and learning behaviors of middle school learners engaged in structured play of the multiplayer online video game Eco (Strange Loop Games). Eco blends elements of educational multi-user virtual environments (MUVEs) and open world construction and creation games. The game features player-driven industry, a real environment and ecology, data visualization tools, and a system to debate and devise environmental regulations. Using the New Environmental Paradigm standard measure of environmental attitudes, the team found positive changes on three questions, as well as evidence of engagement and learning in data visualization and policy discussion.

4. Bridging the Gap Between Privacy Expectations and Access Control Policies on Facebook

Justin Petelka and Jaime Snyder

In spite of efforts by social media designers to help users understand their privacy settings, research has shown that there is a disconnect between how users ▶

◀ understand and make choices related to privacy and how digital infrastructures manage access to posts. Our project investigates how the design of visualizations related to post visibility can help to bridge this gap by: 1.) Exploring novel visual metaphors for the ways in which users consider privacy and security in the context of post visibility on Facebook and 2.) Reducing the burden placed on users to fully understand privacy mechanisms at a systems level.

5. Heuristic Framework for Citizen Science

Jaime Snyder and Siddharth Naik

Citizen science enables scientists and volunteers to come together to collaborate on research projects that require data to be collected, analyzed, and disseminated. However, with the advent of technology, it is a challenge to make sure the platforms are designed well to achieve their intended purpose. How can we improve the design of citizen science platforms to increase volunteer participation? The Heuristic Framework that we present as a part of this study aims to act as a baseline, ensuring that the platforms they host their projects on are built to conform to the highest standards of the usability factors.

6. Inpatient Perspectives and Information Needs for Error Prevention

Shefali Haldar, Sonali R. Mishra, Ari H. Pollack, and Wanda Pratt

Hospital safety has long been acknowledged as a problem in the United States. Although patients and caregivers have great potential to help prevent medical errors, less is known about their perspectives and information needs regarding these quality and safety problems. To fill this knowledge gap, we surveyed 246 individuals at two hospital sites. Our analysis informs the design of hospital technologies to further involve patients and caregivers in error prevention.

7. Patients as Safeguards: Designs to Support Informed Hospitalized Patients

Maher Khelifi, Shefali Haldar, Sonali R. Mishra, Calvin Apodaca, Erin Beneteau, Ari H. Pollack, and Wanda Pratt

Hospital associated medical errors cause significant mortality and morbidity each year. Research has demonstrated that hospitalized patients' access to health information could help prevent these errors. Yet, little work has explored the user experience to best support patients accessing and utilizing their medical information. Through this work, we seek to understand how this information can be presented to best support patients. We conducted 21 interviews with pediatric and adult hospitalized patients. Participants reviewed three different views of a hypothetical hospital experience: Timeline, Goal-Oriented, and Categorical. We evaluated how each design experience could support patients during their hospital stay.

8. Breaking Out of the Black Box: Supporting the Tracking Needs of People with Parkinson's Disease

Sonali R. Mishra, Woody MacDuffie, Eric Hekler, Predrag Klasnja, Larsson Omberg, Michael Kellen, and Lara Mangravite

People with Parkinson's disease lack tools to help them track and understand their symptoms. To understand the questions people with Parkinson's disease ask about their symptoms and what kind of system can meet those needs, we conducted interviews with 17 people with Parkinson's disease and 6 caregivers. We present design concepts for mPower 2.0, a mobile app to help people with Parkinson's disease track information and answer questions about their symptoms to help them manage their condition. This app is part of the mPower study, an mHealth research study using a smartphone app for tracking the symptoms of Parkinson's disease.

9. GestureTag: Using Gestures Instead of Pointing to Acquire Targets for People with Motor Impairments

Ying-Chao "Tony" Tung, Susumu Harada, and Jacob O. Wobbrock

Currently, the most common input technique for target selection on desktops or laptops is pointing with a mouse or touchpad. However, such pointing remains difficult for many people with motor impairments because of the fine motor control required. We present GestureTag, a system that annotates targets on the screen with a simple touch gesture or gesture sequence for selection. These gestures can be performed on a touchpad to acquire targets, thereby removing the need to point-and-click. By employing straightforward spatial mappings between gestures and on-screen targets, gestures can be made fast and easy to learn and use. GestureTag can also utilize eye-tracking to narrow the target area to reduce the complexity of the gestures synthesized and assigned.

10. Toward Assessing the Accessibility of Mobile App Ecosystems Using Epidemiology as a Guide

Anne Spencer Ross, Xiaoyi Zhang, Anat Caspi, James Fogarty, and Jacob O. Wobbrock

Mobile applications (apps) are becoming increasingly important in many aspects of daily life. Making mobile applications accessible for all people of abilities is therefore essential. One step toward that goal is gaining a better understanding of the current state of app accessibility for people with disabilities. App accessibility is often a property considered at the level of a single mobile app, but rarely on a larger scale of the entire app "ecosystem" such as all apps in an app store, their companies, developers, and user influences. We present a novel conceptual framework for the accessibility of mobile apps inspired by epidemiology. Our framework considers apps within their ecosystems, over time, and at a population level. Under this framework, "inaccessibility" is a set of "diseases" that can be viewed through an epidemiological lens. We then present an empirical investigation of a large set of apps, presenting the prevalence of different inaccessibility diseases. The insights gained will guide what accessibility barriers need the most focus for repair.

11. Understanding Assistive and Accessible Technology Adoption and Abandonment by Older Adults

Rachel Franz, Leah Findlater, and Jacob O. Wobbrock

Older adults are adopting mobile technologies at an increasing rate. Many older adults with impairments can benefit from the built-in accessibility features these technologies offer, yet some older adults don't perceive themselves as needing assistive or accessible features. To investigate the adoption of built-in accessibility features, we are conducting a survey and interviews with older adults to investigate how the presentation of accessibility features affects their use.

12. DUI: Detecting Blood Alcohol Level Using Drunk User Interfaces on a Smartphone

Alex Mariakakis, Sayna Parsi, Shwetak N. Patel, and Jacob O. Wobbrock

Breathalyzers are primarily owned by law enforcement and used only after a potentially inebriated individual is caught driving. However, not everyone has access to such specialized hardware. We designed multiple "drunk user interfaces," or smartphone interfaces that measure how alcohol affects a person's abilities, and combined them to form the DUI app. We evaluated DUI on 14 individuals in a weeklong longitudinal study wherein each participant used DUI at various blood alcohol levels (BALs). We found that by accounting for user-specific learning, DUI can estimate a person's BAL with an absolute mean error of 0.005% ± 0.007% compared to breathalyzer measurements.

13. Anachronism by Design: Understanding Young Adult Technology Perspectives through End-User Icon Elicitation

Erin McAweeney, Abdullah Ali, and Jacob O. Wobbrock

Ever since their invention in David Canfield Smith's 1975 Pygmalion system, icons have been a vital part of graphical user interfaces, visually communicating objects and functions to users who depend on them for mnemonic recognition (rather than memory recall). But a surprising number of today's icons on desktops and in mobile apps are based on "anachronistic designs," i.e., designs based on objects or concepts no longer familiar to many users. Perhaps the most pervasive anachronistic icon is the 3.5" floppy diskette still widely used to indicate "Save." Users come to learn icon-command associations and rely on them, but how do today's new adults (18-22-year-olds) who grew up without the real-world associations behind anachronistic icons think about these pervasive little symbols? What icons might they design for themselves instead? What do their current mental models tell us about how technology has evolved, and how it has not? We are interested in answering these and related questions, gaining insight into young adults' experience of the symbols within their technologies. Using an end-user elicitation approach, we also elicit a set of new icon designs from these young adults, who almost certainly have never held a 3.5" floppy diskette in their hands. The result is an opportunity for improving computer icon design, a fundamental component of any graphical user interface, and to better understand perceptions of interactive technologies and their users.

14. Using Transcription Sequences to Enable Less Constrained Text Entry Evaluations

Mingrui "Ray" Zhang and Jacob O. Wobbrock

Current laboratory-based text entry evaluations impose strict constraints on the procedures that must be used in order to produce valid error rate measurements. For example, participants can only use backspace to correct mistakes, cannot reposition the text cursor using the mouse or arrow keys, and cannot use advanced features like auto-correction or word completion. To address these limitations and enable more realistic and less constrained text entry evaluations, we present an algorithmic approach based on transcription sequences, or "T-sequences" for short. For each text entry action, a snapshot of the transcribed string at the point is captured. By assembling sequences of transcribed strings, i.e. T-sequences, and using bioinformatics alignment algorithms like Needleman-Wunsch to extract changes between snapshots, we show how to reduce artificial constraints on text entry evaluations and produce richer text entry measures in the process.

15. Crowdlicit: A Platform for Designing, Running, and Evaluating Crowd-Based End-User Elicitation Studies

Abdullah Ali, Meredith Ringel Morris, and Jacob O. Wobbrock

End-user elicitation studies are a popular participatory design methodology. In such studies, end users are shown the outcomes of specific interactions, and they propose actions (like gestures) or symbols (like command names or icons) that would cause these outcomes. To date, however, end-user elicitation studies have been run only in laboratory settings, limiting the number and diversity of participants. Laboratory settings also entail a high workload for researchers running end-user elicitation studies. We are creating a platform called Crowdlicit to move the end-user elicitation methodology online and into the crowd. Crowdlicit will empower researchers, designers, and industry practitioners to more easily and better create user-centered technologies.

16. $T: Improving Touch Accuracy for Motor and Situational Impairments with Minimal Training Data

Martez E. Mott and Jacob O. Wobbrock

Machine learning approaches for touch input can improve touch accuracy for non-disabled users who are stationary. It remains unclear, however, how well these approaches work for users with motor impairments, or for non-disabled users on-the-go incurring situational impairments. Furthermore, these machine learning approaches typically require large amounts of training data to achieve good performance. Collecting hundreds of thousands of training examples from people with motor impairments can be impractical due to fatigue. To improve touch accuracy for people with motor impairments, and for non-disabled users on-the-go, we created $T, a user-specific touch input algorithm that provides improved touch accuracy with fewer training examples than current machine learning approaches, while still providing excellent touch accuracy, all while being easy to understand, implement, and deploy.

17. Gamification and Flipping in Large Classes

Bob Boiko

Intro to Social Networking Technologies (INFO 101) is an iSchool class for lower division students. Over the last 5 years, we have developed and honed a gamified, flipped, scaffolded, automated, and data driven learning system that uses next generation technology to teach over 450 students per year about the systems they use. Our students complete more than twice as much work as the previous version of the course. They consistently do 10 to 30 percent more work than is needed to get an A grade. Davis et al. (2017) found that a supermajority of the INFO 101 students surveyed found significant value in the methods used in the course.

18. NatureCollections: Can a Mobile App Connect Kids to Nature?

Saba Kawas, Sarah Chase, Katie Davis, and Josh Lawler

Kids are spending less and less time outside and more and more time in front of screens. What if we could harness their enthusiasm for technology to reconnect them to the outdoors? The NatureCollections app seeks to do just that by engaging elementary school children in an exploration of the natural world. Leveraging children's love for collecting things (stickers, baseball cards, shells, etc.), NatureCollections lets them take pictures of nature, identify what they find, and share and curate their photos in categories such as plants, birds, and landscapes. Children using the app are encouraged to go outside and explore their natural surroundings in order to complete photo challenges or photo scavenger hunts. We are currently investigating children's response to NatureCollections, including its effect on their feelings of connectedness to nature. Ultimately, we hope that NatureCollections will increase children's well-being and support their positive stewardship of the environment.

19. Connected Learning at the Library: Developing Librarians' Capacity to Support Today's Digital Youth

Katie Davis, Mega Subramaniam, Kelly Hoffman, Ligaya Scaff, Saba Kawas, and Emily Romeijn-Stout

Project ConnectedLib aims to build public librarians' capacity to incorporate digital media into their work with youth to promote connections across their learning contexts. We are currently developing customizable professional development resources that support librarians from a broad range of public libraries in their efforts to leverage new media technologies and promote youth's connected learning experiences in libraries. We will disseminate the toolkit widely to libraries serving diverse youth across the country.

20. Digital Badges for STEM Education

Caroline Pitt, Adam Bell, Jenny Gawronski, and Katie Davis

This research explores the development and implementation of a digital badge system to promote the skills and achievements of students who participate in an out-of-school science education program, created through participatory design sessions. Additionally, we present findings from our interviews with students, college admissions officers, and potential employers regarding the challenges and opportunities of digital badges in a broader context. This work explores the complexity of integrating digital badging into existing workflows and how badging can be used in out-of-school learning contexts.

21. Cross-Cultural Comparisons of Adult-Child Interactions with Educational Technology

Kate Yen, Villy Chen, Carol Cheng, Amy Chen, Yiran Ni, and Alexis Hiniker

In this study, we examined two educational games for preschoolers: a highly structured game designed to support the development of executive function skills and an exploratory game that encourages pretend play. Preschooler participants were recruited to play both games and their parents were interviewed. After conducting play sessions with families in the U.S., China and Taiwan, we used a two-by-two study approach to evaluate design choices and observed participatory and joint media engagement from different cultures.

22. Addictive Experiences in Mobile Interfaces

Alexis Hiniker, Jonathan Tran, and Katie Yang

Smartphones and mobile applications have enabled users to access a world of features and content in the palm of their hands. Many of these mobile applications are professionally designed to keep the user engaged, or what some consider "addictive." Our goal in this study is to understand what specific user interface features make it more or less likely a user will feel that an experience is addictive. We also hope to learn more about what specific features prompt users to self-interrupt to engage with an app. We are currently developing a mobile application that helps spark conversation about phone usage and helps users reflect on their behaviors and habits. We are also conducting interviews that include a phone demo and participant sketching, enabling us to co-design new interfaces with users. As phones become ever-present in all of our activities, we seek to understand people's experiences with feelings of addiction, self-interruption, and checking in, and to identify what designers can do to help users engage in behaviors they feel good about.

23. Why Doesn't It Work? Voice-Driven Interfaces and Young Children's Communication Repair Strategies

Yi Cheng, Kate Yen, Yeqi Chen, Sijin Chen, Yiran Ni, and Alexis Hiniker

In this study, we examine the conversational repair strategies that preschoolers use to correct communication breakdowns with a voice-driven interface. We conducted a two-week deployment in the homes of 14 preschoolers of a tablet game that included a broken voice-driven mini-game. And we collected 107 audio samples of these children's (unsuccessful) attempts to communicate with the app. We found that across participants, children tried a common set of repair strategies. Children were persistent, rarely giving up on the interaction, asking for help, or showing frustration. When parents participated in the interaction, they moved through four phases of engagement. As voice-driven interfaces become pervasive in family homes, our findings provide insight into how young children communicate with these technologies.

24. Informal STEM Learning: Professionalizing the Field?

Kris Morrissey

Individuals who work in museums, zoos and national parks come to their careers through a range of idiosyncratic paths. While we each share a commitment to the value of lifelong STEM learning, we are also committed to the principles of self-directed, intrinsically-motivated informal learning. What then does it mean for an individual to become a "professional" or for our field to "professionalize"? Through research funded by the NSF, a multi-university and institution collaboration developed a framework that identifies the competencies of an informal STEM professional. This poster presents the framework (islframework.org), the research, and our next steps.

25. Neighborhood Walks and Community Talks: A Research Study Examining Public Library Family Outreach Strategies and Challenges

Michelle Martin, Kathleen Campana, and J. Elizabeth Mills

Public libraries are an integral resource for supporting families in underserved communities. However, many families do not come into the library to use relevant programs and services. How can libraries reach families where they are to support their children's learning? This IMLS-funded study, composed of three phases of data collection (focus groups, interviews, and a nationwide survey), examined current library outreach practices. This poster presents preliminary findings, including needs assessment strategies, types of programs offered outside library walls, program goals, community partners, and current challenges to outreach work with underserved communities.

26. Tribal Research and Data Governance: A Comparison of Six Tribal Institutional Review Board Applications in the United States

Nicole Kuhn, Myra Parker, and Clarita Lefthand-Begay

American Indian / Alaskan Native communities are asserting their rights as sovereign nations to integrate culturally relevant practices and community-wide protections into research that is conducted within their Nations. This work seeks to examine the similarities and differences between tribal IRB and non-tribal IRB applications. We compared six tribal IRB applications created by three different tribal communities, one tribal college, one tribal health organization, and an Indian Health Service Area Office. The major contributions of this work are a dataset of all presently active tribal IRBs, a systematic analysis of the difference in online presence and format for application requirements, and a better understanding for the unique place-based requirements central to tribes.

27. Empowering Families Facing English Literacy Challenges to Jointly Engage in Computer Programming

Rahul Banerjee, Leanne Liu, Kiley Sobel, Caroline Pitt, Kung Jin Lee, Meng Wang, Sijin Chen, Lydia Davison, Jason Yip, Andrew J. Ko, and Zoran Popovič

Research suggests that parental engagement through Joint Media Engagement is an important factor in children's learning for coding and programming. Unfortunately, English-language learning (ELL) families from marginalized communities face particular challenges in understanding and supporting programming, as code is primarily authored using English text. We present BlockStudio, a programming tool for empowering ELL families to jointly engage in introductory coding. We share a case study involving three community centers serving immigrant and refugee populations. Our ▶

◀ findings show ELL families can jointly engage in programming without text, via co-creation and flexible roles, and can create a range of artifacts.

28. Science Everywhere: Designing Public, Tangible Displays to Connect Youth Learning Across Settings

June Ahn, Tamara Clegg, Jason Yip, Elizabeth Bonsignore, Daniel Pauw, Lautaro Cabrera, Kenna Hernly, Caroline Pitt, Kelly Mills, Arturo Salazar, Diana Griffing, Jeff Rick, and Rachael Marr

A major challenge in education is understanding how to connect learning experiences across settings (e.g., school, afterschool, and home) for youth. In this paper, we introduce and describe the participatory design process we undertook to develop Science Everywhere, which is a sociotechnical system where children share their everyday science learning via social media. Public displays installed throughout the neighborhood invite parents, adults, peers, and community members to interact with children's ideas to better develop connections for learning across settings. Our case study of community interactions with the public displays illuminates how these technologies encouraged behaviors such as the noticing of children's ideas, recognition of people in the neighborhood, and bridging to new learning opportunities for youth.

29. Using Co-Design to Examine How Children Conceptualize Intelligent Interfaces

Julia Woodward, Jason Yip, and Lisa Anthony

Research has focused on improving recognition and accuracy by accommodating children's specific interaction behaviors. Understanding children's expectations of Intelligent User Interfaces is also important to decrease the impact of recognition errors that occur. To understand children's conceptual model of IUIs, we completed four consecutive participatory design sessions on designing IUIs with an emphasis on error detection and correction. We found that, while children think of interactive systems in terms of both user input and behavior and system input and behavior, they also propose ideas that require advanced system intelligence, e.g., context and conversation.

30. Examining Adult-Child Interactions in Participatory Design

Jason Yip, Kiley Sobel, Caroline Pitt, Kung Jin Lee, Sijin Chen, Kari Nasu, and Laura Pina

Prior studies have focused on child interactions in participatory design (PD) with adults and children, but less is known about what specific adult-child interactions constitute a partnership. In this study, we unpack what constitutes an "equal partnership" in PD between adults and children. On the basis of prior literature, we created a new framework that examines the complementary roles between children and adults. Next, we analyzed a case study of a year-long intergenerational design team of children (ages 7-11) and adults. From this analysis, we determined that design partnerships are composed of four dimensions that span from unbalanced to balanced interactions: facilitation, relationship building, design-by-doing, and elaborating together.

31. The Learning Experiences of Youth Online Information Brokers

Jason Yip, Carmen Gonzalez, and Vikki Katz

In the U.S., there is a large proportion of families where one or both parents are English language learners (ELL). Children in these families often serve important roles as brokers, by engaging their linguistic capabilities, cultural familiarity, and technological skills to bridge their families' access to information resources. Despite the central role that child brokers play, scholars know little about how they search for, interpret, and translate online information. Using data from an

exploratory study with Latino youth (ages 11-14) that involved interviews, online search tasks, and group discussions, we investigate the learning processes, challenges, and strategies that youth employ as they broker online information for their ELL parents.

Code and Cognition Lab

Amanda Swearngin, Dastyni Loksa, Greg Nelson, Kyle Thayer, Benjamin Xie, Leanne Hwa, Harrison Kwik, Alex Tan, and Andrew J. Ko

The Code & Cognition Lab investigates effective, equitable, and scalable ways for humanity to learn and interact with computing. We will demonstrate new tutors for learning to code, new technologies that mine code to transform web applications, and new discoveries about what makes learning to code difficult. We will be presenting the following five demos:

32. Genie: Input Retargeting on the Web through Command Reverse Engineering

Converts websites that only support one type of input, such as mouse or keyboard, to support all kinds of input, including speech, making applications more accessible and powerful.

33. PSTutor: Teaching Programming Problem Solving with Worked Examples

Illustrates a new approach to teaching programming by focusing on the problem-solving process and self-regulation skills.

34. PLTutor: Rapid Programming Language Learning

Teaches programming language semantics by providing a highly granular visualization of program execution.

35. Gidget: A Debugging Game for Learning to Code

Teaches debugging by translating debugging tasks into game-based puzzles.

36. Rewire: Interface Design Assistance from Examples

Helps designers leverage example screenshots by automatically generating a vectorized design mockup for a user interface screenshot inside of a real-world vector-based interface design tool, Adobe XD.

37. Practical Tools for Private Data Sharing

Luke Rodriguez and Bill Howe

Individuals' data is shared and stored by companies in an increasing number of ways, and each dataset is held to a diverse set of privacy requirements. The state of the art is the strong mathematical guarantee of Differential Privacy, but does this guarantee align with users' privacy expectations? We investigate using a survey and present our results alongside implications for Data Synthesizer, a practical tool for generating synthetic datasets developed collaboratively with Drexel University.

38. PhyloParser: A Hybrid Algorithm for Extracting Phylogenies from Dendrograms

Poshen Lee, Sean Yang, Jevin D. West, and Bill Howe

We introduce PhyloParser, a fully automated, end-to-end system for automatically extracting species relationships from phylogenetic tree diagrams using a multi-modal approach to digest diverse tree styles. Our approach automatically identifies phylogenetic tree figures in the scientific literature, extracts the key components of tree structure, reconstructs the tree, and recovers the species relationships. We aim to use PhyloParser to build a linked, open, comprehensive ▶

◀ database of phylogenetic information that covers the historical literature as well as current data, and then use this resource to identify areas of disagreement and poor coverage in the biological literature.

39. Clustering Large Citation Networks

Jason Portenoy and Jevin D. West

Scholarly citation networks can reveal trends in the development of science and the movement of ideas. As these networks get bigger, new techniques and approaches are needed to surface patterns and aid understanding. We outline some of our recent work in clustering these networks using the Infomap algorithm, which identifies clusters by optimizing a compression function. We use a parallel-processing variant of Infomap to perform clustering on very large citation networks (over 100 million papers and 1 billion citations) using supercomputing clusters. We explore how we can use these clusterings to gain insight into the structural patterns and relations in scholarly networks.

40. Echo Chambers in Science?

Lanu Kim, Jevin D. West, and Katherine Stovel

This project aims to better understand the implications of the emergence of academic search engines on the practice of scientific discovery and information dissemination. We ask whether these new tools are increasing access to a wider range of prior literature and thereby democratizing science, or scientists are increasingly reading and citing a more concentrated subset of 'top' papers due to the pressure of massive amounts of information on searching and filtering processes, thereby creating an echo chamber in science. We answer this question by using the bibliographic information and citation count data from the Web of Science database.

41. Critical Pedagogy Summit

Ivette Bayo Urban and Elliott Stevens

Critical Pedagogy is a teaching approach that helps students question and challenge domination and the beliefs and practices that dominate them. It is Social Justice + Education. The Critical Pedagogy Summit (UW 2017) was an opportunity to come together to co-teach and co-learn. It was distributed, open, and collaborative. The summit was intended to meet the needs of digital interdisciplinary scholarship and practices. And it did!

42. The Untold Story: The Masked Experiences of Women with Autism Working in IT

Hala Annabi

Women with autism experience significant barriers in securing, retaining, and advancing in employment in the IT workplace. Autism is more common in males (1 in 42) than in females (1 in 189) (CDC) and, as a result, most autism research focuses on men. There are no IT employment-specific or general employment studies that focus on women with autism, or even include sufficient numbers of women to derive any valid insights regarding the unique experiences of women with autism in IT. Our goal in this project is to give a voice to women with autism in IT by investigating the challenges and opportunities they experience in the workforce.

43. Prepare for IT: Prepare IT Students With Autism for the IT Workplace

Hala Annabi, Jill Locke, Mia Vogel, and Julia Bobrovsky

Employment rates and outcomes for young adults with autism who do not have intellectual disabilities are much lower than expected for individuals of their talents. These outcomes are often attributed to these young adults' readiness for the social and professional

nuances of the workplace. Prepare for IT is a research and preparation program that will prepare college students with autism to seek, obtain, and retain careers in IT. We aim to empower young adults with autism who are pursuing IT careers to define their professional paths and address social barriers to persisting and excelling in the IT workplace. The program uses an individual, strength-based approach for career planning and skill development.

44. Autism Ready Libraries

Emily Romeijn-Stout, Jill Locke, and Hala Annabi

Individuals with Autism Spectrum Disorder (ASD) and their families often report challenges in accessing community resources and services. Libraries are community spaces built to provide services and support to the populations that most need it. The Autism Ready Libraries project investigates how libraries can best support, serve, and welcome individuals with ASD and their families. The study utilizes exploratory focus groups and interviews to determine the challenges and opportunities facing individuals with ASD and their families, as well as the librarians serving them. This research contributes to our theoretical understanding of library services and develops evidence-based training resources, programs, and supports to prepare Autism Ready Libraries that welcome and include individuals with ASD and their families.

45. Someone On My Level: How Women of Color Perceive Undergraduate Teaching Assistants in Introductory Technology Classes

Mina Tari and Hala Annabi

Women of color face multiple barriers in the STEM field, especially in computer and information sciences. We identified inclusion and exclusion factors for women of color in introductory STEM courses, focusing on what factors affect a sense of belonging and how undergraduate teaching assistants (TAs) have been used to mitigate them. Undergraduate TAs play a unique role as mentors for students, and we interviewed three women of color in an introductory information science course to understand their perspectives. Even though they had mixed feelings of belonging in the classroom, all perceived their undergraduate TAs as holding beneficial roles influencing their belonging. The implications of this work can assist in future TA training and lead to improving the number of women of color in technology fields.

46. Co-Creating MLIS Curriculum for Cultural Competence and Community-Driven Learning

Susan Hildreth, Beck Tench, and Hayley Bierbaum

The University of Washington iSchool wants to ensure that libraries have a strong and vibrant future in our communities. The Gates Foundation-funded Distinguished Practitioner in Residence (DPIR) program is designed to make a more impactful connection between public libraries and the academy. Susan Hildreth, inaugural DPIR, and her project team are enabling a platform for the co-design of MLIS curriculum by faculty, library employers, and students - focusing on the critical priorities of cultural competence and community-driven learning in workshops planned for spring 2018. Success will be in the form of knowledge and tools to ensure that MLIS education is aligned with needs of 21st century libraries.

47. Digital Humanities Pedagogy in the University of Washington iSchool MLIS Program: A Curricular Balance of Multidisciplinary Expertise

Helene Williams

The Digital Humanities (DH) Librarianship course trains MLIS students to be full contributors in the DH realm, covering humanities disciplinary content as well as digital tools used by scholars. The course addresses the tension between theory and applied skills with a balanced approach. Multiple pedagogies are used in this hybrid mode course; hybrid at the iSchool means synchronous residential and online enrollment, with students attending either in person or via an online classroom. This poster will highlight the pedagogical methods used and content covered in the DH Librarianship course as well as the student projects and learning outcomes.

48. Diverse Voices: A How-To Guide for Facilitating Inclusiveness in Tech Policy

Lassana Magassa, Meg Young, and Batya Friedman

All too often, policy development for emerging technology neglects underrepresented populations. In response to this challenge, the UW Tech Policy Lab developed the Diverse Voices method in 2015. The method uses short, targeted conversations about emerging technology with "experiential experts" from underrepresented groups to provide feedback on draft tech policy documents. This process works to increase the likelihood that the language in the finalized tech policy document addresses the perspectives and circumstances of broader groups of people – ideally averting injustice and exclusion. Diverse Voices: A How-To Guide for Facilitating Inclusiveness in Tech Policy makes this method available for others.

49. Metaphor Cards: A How-to-Guide for Making and Using a Generative Metaphorical Design Toolkit

Nick Logler, Daisy Yoo, and Batya Friedman

Generative metaphorical design, while rich in possibility, is not easy to do. In response, we have developed Metaphor Cards, a toolkit for supporting metaphorical design thinking. In this pictorial, we introduce Metaphor Cards and provide a How-To-Guide for design researchers to make and use their own sets. To demonstrate this process, we provide a case study documenting our development of a set of Metaphor Cards for designing information systems for international justice. We conclude with reflections on the benefits and limitations of the Metaphor Card toolkit and suggestions for how to adapt Metaphor Cards to other domains and technologies.

50. Collaborative Reflection: A Practice for Enriching Research Partnerships Spanning Culture, Discipline, and Time

Daisy Yoo, Odeth Kantengwa, Nick Logler, Reverien Interayamahanga, Joseph Nkurunziza, and Batya Friedman

All too often, research partnerships are project-driven and short-lived. Multi-lifespan design and other longer-term approaches offer alternative models. With this work, we contribute one alternative model for cross-boundary research partnerships spanning longer timeframes and offer one best practice: collaborative reflection. We provide a case study of a nine-year partnership between a Rwandan NGO focused on peacebuilding and a U.S. university research group focused on information design. We document our collaborative reflection process and reflect these themes: 1.) Common ground: sensibilities and commitments; 2.) Trust; 3.) Research landscape: crossing nations and institutions; 4.) Research as a healing mechanism; and 5.) Multi-lifespan design partnership.

51. A Survey of Value Sensitive Design Methods

Batya Friedman, David Hendry, and Alan Borning

Value sensitive design (VSD) is a theoretically grounded approach to the design of technology that accounts for human values in a principled and systematic manner throughout the design process. In this article, we provide a survey of 14 VSD methods, serving such purposes as stakeholder identification and legitimation, value representation and elicitation, and values analysis. The article provides a summary of VSD methodology and theoretical constructs, introduces the 14 methods, and discusses methodological strategies and heuristics to support skillful VSD practice. We conclude with reflections on core characteristics of VSD methods, and heuristics for methodological innovation.

52. How Can You Map the World's Libraries? (Africa Data Project)

Maria Garrido, Jason Young, Chris Rothschild, and Chris Jowaisas

The Africa Data Project investigates how to create sustainable systems for data collection, use, and analysis across multiple African library systems. This poster will provide an overview of one of the first questions that we are investigating: How can library locations be collected and verified? Locational data are key to unlocking connections across datasets and providing a foundation for additional data collection related to library programs and services. Our project's context presents a variety of challenges that we are seeking to overcome through methodological and technological innovation.

53. Data for Decision Making Curriculum in Myanmar

Chris Rothschild, Nic Weber, and Maria Garrido

Since its momentous democratic elections in 2010, Myanmar has continued to transition from a society of heavy censorship to one inundated with information and data from across the globe. The changes in the information ecosystem have forced a shift in how the country's government and civil society organizations approach data and use them for evidence-based decision making. This poster will present 1.) The findings of a locally conducted needs assessment of the data environments of Myanmar's government and CSOs and 2.) A curriculum developed to support Myanmar's organizations in more effective use of data for decision making.

54. City of Seattle Digital Equity Evaluation Plan

Stacey Wedlake, David Keyes (City of Seattle), Mike Crandall, and Samantha Becker

Building on 20 years of work, in 2016 the City of Seattle published a Digital Equity Action Plan to help ensure all residents and neighborhoods have access to and are proficient in using digital technologies. In order to monitor and assess progress toward the plan's goals, the City worked with researchers from the iSchool to develop a strategy and methodology for evaluating and reporting on output and outcomes. The completed evaluation plan includes a theory of change, indicator framework, data collection and reporting strategy, and recommendations for next steps.

55. TASCHA and Future of Libraries

Chris Coward

With funding from the Gates Foundation, the Technology & Social Change Group (TASCHA) is embarking on a 10-year partnership with the International Federation of Library Associations and Institutions (IFLA) and the Public Library Association (PLA) to continue the acceleration of public libraries as critical centers of learning, creativity, and community development. TASCHA's focus is to generate new ideas and solutions that will advance innovation in the public library field, serving as an open platform for thought leaders from within and outside the library sector to engage on the pressing issues facing the field.

56. Algorithmic Reputation and Human Values

Michael A. Katell

Reputation is a byproduct of the negotiations among people seeking to cooperate socially and commercially, involving questions of trust and the mitigation of risk. In the context of information systems, reputation becomes, in part, "algorithmic," as datafied human activities are routinely and automatically observed, tracked, and analyzed. Algorithmic reputation as a saleable information good is employed by opportunity gatekeepers in deciding among candidates for diverse life experiences, such as who should get a coupon, a job, or a jail sentence. We may ask: Does the market in reputation acceptably balance its perceived benefits against costs to human agency and equity?

57. Insecurity and Industrial Organization: Evidence from Afghanistan

Joshua Blumenstock, Tarek Ghani, Ethan B. Kapstein, Thomas Scherer, Sylvan Herskowitz, and Ott Toomet

This paper analyzes how firms respond to local changes in insecurity in a developing economy. We employ mobile phone metadata for 2,300 firms in Afghanistan. We illustrate this method for Battle of Kunduz, an attack on Afghanistan's fifth-largest city. Thereafter we extend the methodology through regression analysis using thousands of violent incidents through four years. We find that firms reduce presence following major increases in violence, that effects persist for up to six months in the affected district, and that larger firms respond more negatively to these shocks. We discuss the potential mechanisms and policy implications.

58. Women's Contributions to Living Fully in a Tseltal Indigenous Information System

Yvette Iribe, Ricardo Gomez, Jeannie Berwick, Maria del Mar Moreno, and Genoveva Vergara

We discuss the role of women in endogenous community development among the Tseltal indigenous communities in Chiapas, Mexico. This is part of a Tseltal-integrated information system that brings together a community radio station, library, and an evaluation system to support community development activities that promote the notion of living fully, or in Tseltal language, "Lekil Cuxlejalil." We identify key themes based on the testimonies of women working in Tseltal community development and discuss how they support the integrated information systems.

59. Exacerbating the Vulnerabilities of Undocumented Migrants: The Risks Involved in the Humanitarian Information Activities of Migrant-Aid Organizations

Bryce C. Newell, Sara Vannini, Ricardo Gomez, David Nemer, and Sigifredo Mora

The information practices and use of information and communication technologies (ICTs) by humanitarian migrant-aid organizations, including activities that encompass collecting, storing, processing, analyzing, using, transmitting, and releasing data about migrants to the public, can help humanitarian and migrant-aid organizations be more effective in their work. However, the use of ICTs and certain information practices in these contexts may also increase or exacerbate significant risks to the people these organizations intend to help. In this project, we examine and compare humanitarian information activities, as they relate to working with and providing assistance and support to undocumented migrants already in the United States.

60. Author Information for Knowledge Organization in the Digital Age

Wan-Chen Lee

Authorship is a critical topic in knowledge organization. "Author" is often used as a characteristic for arrangement and as an access point for retrieval. Through literature review, we can see that authorship is a cultural, social, and temporal concept, and author information in the cataloging tradition does not present all the author functions. This paper discusses challenges concerning the collection, recording, and representation of author information in the digital age, and the consequences of enriching author information. We argue that more information is not necessarily better for cataloging in the digital age.

61. Lemmata Manifest: Modeling Classification Theory Using IDEF0 Formalism to Surface Elisions

Joseph T. Tennis

The design methodologies of classification schemes are often found in narrative form and, in the case of S. R. Ranganathan, in long texts. This project uses a translation protocol to represent classification methodology in a formalism, specifically IDEF0, in order to understand the scope of work described in the text. It also points out what is missing. This poster presents that work, including processes or entities omitted – the lemmata – in the methodology currently. The motivation for this work is to advance our understanding of this methodology for the purposes of information system design.

62. Semantic Space and Conceptual Geometry: A Gap Analysis for Classification Methodology

Joseph T. Tennis

In the context of knowledge organization and metadata research, there have been many attempts to understand the relationships between terms in indexing languages using spatial metaphors. This, combined with the work of empirical semantics, and research on concept formation in the mind, provides us with a suite of methodologies that may hold potential for analyzing indexing languages, their nature and utility. This poster presents a sample of those methodologies for discussion as the first step in constructing a more robust toolbox for knowledge organization system analysis.

63. Methodological Constructs in Descriptive Informatics and Framework Analysis

Joseph T. Tennis

In service to understanding metadata in the wild, we have made a descriptive turn in the study of metadata systems. This work, including Feinberg, Andersen, ▶

◀ Adler, and others, has begun the project of reading metadata schemes. In that vein, we have developed some methodological constructs to help systematize these readings and extend them to systems evaluation. We call our extension, framework analysis. This poster provides a list of those constructs, rooted in literature, and templates for framework analysis.

64. Estimating Article Influence Scores for Open Access Journals

Bree Norlander, Peter Li, and Jevin West

Motivated by a desire to curb "predatory" publishing, we created FlourishOA, a one-stop shop for authors, publishers, funders, librarians, and policy makers to find high-quality, cost-effective Open Access (OA) journals. FlourishOA provides Article Processing Charge and Article Influence (AI) score data for OA journals. AI scores are retrieved from InCites Journal Citations Reports (JCR). However, the FlourishOA database contains thousands of journals not indexed in JCR. In order to provide users with more data, our team gathered five years of citation counts from Microsoft Academic Graph's API and used a log-transformed linear regression to predict 2,635 additional 2015 AI scores.

65. Open Data: Aligning Education with Public Sector Needs Data Problems

Carole Palmer, Nic Weber, An Yan, and Bree Norlander

The Open Data Literacy (ODL) project is working to prepare students with the open data competencies needed in public libraries and government agencies, by advancing curriculum and providing field experiences in collaboration with Washington state agencies. To determine curriculum gaps, we are examining data problems faced by public sector organizations. Based on the first year of student field experiences, we found that data organization and access, data quality, and data visualization were prominent problem areas. While captured by current frameworks of data expertise, certain competencies, such as data organization and access, need to be prioritized and deepened in the curriculum.

66. Mining Open Government Data

Nic Weber and An Yan

In this poster, we describe results from mining citations, mentions, and links to open government data (OGD) in peer-reviewed literature. We inductively develop a method for categorizing how OGD are used by different research communities, and provide descriptive statistics about the publication years, publication outlets, and OGD sources. Our results demonstrate that, 1.) The use of OGD in research is steadily increasing since 2009; 2.) Researchers use OGD from 98 different open government data portals, with data.gov.uk and data.gov being the most frequent sources; and 3.) We provide evidence that OGD from developing nations, notably India and Kenya, are being frequently used to fuel scientific discoveries.

67. Social Tagging: Organic and Retroactive Folksonomies

Chris Holstrom

To better understand how folksonomies and social tagging compare to professional indexing languages, this study analyzed over 2 million keyword tags on MetaFilter and Ask MetaFilter. Most of the tags were created when users first published posts, but some tags were retroactively created by a small volunteer group. Organic and retroactive tags followed a power law distribution, as expected for folksonomies. Based on tag distribution, use of organization tags, and avoidance of synonyms, retroactive taggers did not tag like professional indexers. Instead, they tagged like organic taggers. These findings suggest that folksonomies remain a distinctly different approach to knowledge organization.

68. A Transcription Engine for City Council Legislation

Nic Weber and Jackson Brown

This poster describes our work in building an open-source transcription engine and platform for crowdsourced editing of city council documents. We demonstrate an initial implementation of our platform with the City of Seattle, and discuss the implications for this work in Civic Technology development more generally.

69. A Policy Analysis of Civic Metadata Standards and Implications for the City of Seattle Open Data Program

Nina Showell and Nic Weber

In 2017, the City of Seattle began a project to update the City's Open Data Portal, data.seattle.gov. Drawn from the perspective that metadata is a positive contributor to the quality, discoverability, and accessibility of datasets, this research project examines how peer cities' open data programs employ metadata standards. Based on this analysis, the recommendation is that the City of Seattle should follow the guidance of the federal government and adopt the Project Open Data Metadata Schema v1.1 as well as the data.json data format, which is natively supported by Seattle's current portal, Socrata.

70. Licensing Open Data

Rochelle Lundy and Nic Weber

The purpose of this study is to understand the licensing practices of U.S. cities with regard to their publication of open government data (OGD). It aims to provide initial descriptive data and analysis regarding the licenses and other terms that govern how OGD made available through city data portals may be reused.

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