Undergraduate Research Symposium May 18, 2018 Mary Gates Hall

Online Proceedings

POSTER SESSION 2

Commons West, Easel 5

1:00 PM to 2:30 PM

No, You're Fake News: Crowdsourcing User Reports to Improve Techniques for Countering Misinformation

Cole Chamberlin, Senior, Applied & Computational Mathematical Sciences (Discrete Mathematics & Algorithms), Informatics
Ethan Wesley Anderson, Senior, Informatics
Evan James Frawley, Senior, Informatics
Lucy Eun, Senior, Informatics
Mentor: Amirah Majid, The Information School
Mentor: Jevin West, Information School

Misinformation has flourished in the wake of the internet boom. Due to the increased velocity and volume of the information being generated, accurate and efficient identification of misinformation is a high priority for fact-checking organizations. Snopes.com, "the oldest and largest fact-checking site on the internet", crowd-sources reports from their large user base to inform their journalists about which topics to cover. In this study, we analyze methods for increasing both the quantity and quality of user submissions. We decrease the cognitive load imposed by the Snopes reporting system through a simplified user interface. We also utilize clustering and labeling techniques to aggregate user reports and make them more actionable. To collect initial data for our study, we enhance the user experience and metadata collection of a web-based content reporting system used by Snopes. We develop an analytics framework to clean and aggregate the reports, with the goal of decreasing the lag between initial rumor creation and the response from Snopes. We develop metrics based on article metadata to quantify rumor virality and corresponding Snopes rebuttals. The results of this study show improvements to the process of collecting data that informs fact-checking organizations. Our methods reduce the manual curation required by fact-checking journalists, which enable them to reallocate their resources to debunking rumors.

POSTER SESSION 2

Commons West, Easel 2

1:00 PM to 2:30 PM

Addictive Experiences in Mobile User Interfaces

Katherine Suvan Yang, Sophomore, Pre-Major (Arts & Sciences)
Jonathan Anh Tran, Junior, Human Centered Design & Engineering
Mentor: Alexis Hiniker, Information School

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. We have found that participants can identify negative feelings about their phone usage behaviors but those feelings are not strong enough for them to actively seek change

POSTER SESSION 2

Commons West, Easel 3

1:00 PM to 2:30 PM

Design of Video-Viewing Platforms and Children's Media Consumption

Sharon Saiyin Heung, Junior, Human Centered Design & Engineering
Mentor: Alexis Hiniker, Information School
Mentor: Julie Kientz, Human Centered Design & Engineering

Watching entertainment media is a popular activity for children's learning and leisure, playing a central role in children's everyday lives. However, Child Development research shows that extensive video consumption is linked to unhealthy development, including disrupted sleep patterns, increased like-

lihood of obesity, and reduced imaginative play. In this study, we explore how video-viewing platform design features contribute to children's media use. We introduce CoCo's Videos: a video-viewing platform for preschoolers with features that encourage children to self-manage media consumption, enabling children to play a role in setting and sticking to their own limits on the amount of video consumption. We deployed three different versions of CoCo's Videos to 24 different families for three weeks in a counterbalanced within-subjects study design. Preschoolers experienced three different versions of CoCo's Videos: one version is neutral to the limits they set, another version enforces limits they set ("lock-out"), and the last version challenges the limit by automatically playing more content after their set limit ("post-play"). Our results show that the post-play feature significantly decreased children's autonomy and self-regulation, indicated by extended video-viewing time beyond the set limit, leading to increased parent intervention. Our results show that the lock-out feature did not reduce viewing time or parent intervention. Ultimately, our research advises others to avoid platforms that undermine children's autonomy and intention, which will likely be more effective than parental controls in developing healthy media habits.

POSTER SESSION 2

Commons West, Easel 6

1:00 PM to 2:30 PM

Blockchain: Possible Applications and Limitations for Human Rights Protection

Jion Yi, Senior, International Studies, Informatics
UW Honors Program, Undergraduate Research
Conference Travel Awardee
Mentor: Annie Searle, The Information School

Blockchain is a technology as fascinating as fast-evolving. It is a data recording paradigm which allows encrypted transactions among the participating entities in the network. These transaction data are then recorded on a public ledger through a multi-party authentication process. The absence of central authority and the immutability of the recorded data make corruption or fraud less likely on Blockchain, which contributes to its increasing popularity today. Its most famous application is cryptocurrency, such as Bitcoin and Ethereum. Unbeknownst to the general public, however, is the flexibility of Blockchain that can be applied to many purposes other than cryptocurrency. For this research, I explore the potential usage of Blockchain for protection and promotion of human rights around the world. My hypothesis is the implication of blockchain for applications for human rights, both socio-economic and civil-political. I intend to focus on three human rights specifically: access to food and shelter, rights to political participation, and rights to healthcare. By the end of this research, I will have approached this through the case studies of countries that have started applying the technology in various usages. For instance, in Spain, Estonia, and South Korea, companies and organizations started developing and using voting systems based on Blockchain; in Jordan, the UN World Food Program provided Ethereum voucher to Syrian refugees to help their needs. I will also have explored its technical limitations by examining cybersecurity risks of various blockchain technologies. For instace, I will have looked into the blockchain technologies which cryptocurrency companies have used, such as the DAO, Mt. Gox, and Bitfinex, which experienced cyberattacks and lost hundreds of millions of dollars. For a successful application of Blockchain to human rights protection, such cybersecurity risks must be identified and prevented. I expect to find that despite its evident vulnerabilites, blockchain has indisputable benefits must be utilized for human rights protection.

POSTER SESSION 2

Commons West, Easel 7

1:00 PM to 2:30 PM

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

Nicole Simone Kuhn, Junior, Informatics
Mentor: Clarita Lefthand-Begay, iSchool
Mentor: Myra Parker, Psychiatry and Behavioral Sciences

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. Institutional Review Boards are entities responsible for overseeing all research that involves human subjects and ensuring that ethical standards are met. This work seeks to examine the similarities and differences between Tribal Institutional Review Board (IRB) and Non-Tribal IRB application processes. 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 include a dataset of all federally registered 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. Preliminary results include a new dataset of 33 active and 17 deactivated federally registered Tribal IRBs. Our comparison of six of these active Tribal IRBs has revealed notable areas in which they are similar to each other and different from Non-Tribal IRBs. These areas include community involvement in the research process, ensuring research meets communities' needs, awareness and implementation of culturally respectful methodologies, meaningful reporting of results to the researched communities, and tribal ownership of research data.

SESSION 2N

MCNAIR SESSION - STORYTELLING, DIGITAL VISUALIZATION, AND CORPORATE SOCIAL RESPONSIBILITY

Session Moderator: Gabriel Gallardo, Geography
MGH 295
3:30 PM to 5:15 PM
* Note: Titles in order of presentation.

Let's Talk About Money: Do Immersive Literacy Activities Influence Conversations between Children and Adults?
Khatsini Simani, Senior, Business Administration (Finance)
McNair Scholar
Mentor: Michelle Martin

Following the 2008 financial collapse conversations about understanding personal finance have expanded in the United States. Although government, educators and economists have varying interpretations of the term "financial literacy," it is generally agreed upon that people need more financial knowledge. Under the assumption that early conversations are useful tools for families to learn about money together, I developed the following hypothesis in my study: engagement with hands-on activities and reading will encourage children and their guardians to talk with each other about money more frequently. The study lent itself best to participatory action research and was developed in partnership with Compass Housing Alliance, an organization which provides housing for formerly homeless families. First, children's books were identified that incorporated the topic of money and centered the experiences of children from ethnically and economically diverse backgrounds. Students from the UW iSchool's Master of Library and Information Science were invited to utilize these books for a one-day Read-a-Rama event titled "Let's Talk About Money." Founded by UW iSchool Professor Dr. Martin, Read-a-Rama is an immersive literacy program, featuring hands-on activities, group, and individual reading time for children ages 4-11. Before and after the event, parents and guardians of participants were invited to indicate the frequency with which they spoke to their children about money. Through anonymous survey questions and observation notes, the engagement of children with the topic and the potential impacts of the program were explored through anonymous survey questions and observation notes. Following Read-a-Rama, I expected some parents to indicate that they would talk with their children more frequently about money. Observation notes and survey outcomes might aid librarians, educators, and other stakeholders who aim to engage families on the topic of money in alignment with children's literacy development.

POSTER SESSION 3

Commons West, Easel 7
2:30 PM to 4:00 PM

Automatically Classifying Art Images Using Computer Vision
Chris (Bum Mook) Oh, Senior, Informatics
Mary Gates Scholar
Daniel Thomas Merchant, Senior, Informatics
Mentor: Jevin West, Information School

Millions of art images have been digitized over the last several decades. This has created new opportunities for art scholars and historians. However, searching and navigating these art images is difficult because of the sparsity of the metadata and contextual information used to describe these images. Unless one knows the exact title and artist, finding related paintings is a difficult task without the metadata. The research in this project addresses this challenge by developing unsupervised computer vision methods that will extract metadata automatically from paintings. Our dataset will include more than 2 million art images from Arstor, a non-profit organization that distributes art images to libraries and universities. If successful, we plan to build an interactive interface for exploring the extracted features and for developing a recommender system that could be used on platforms such as Artstor.

POSTER SESSION 4

Commons West, Easel 10
4:00 PM to 6:00 PM

NatureCollections: Can a Mobile App Connect Kids with Nature?
Julian Andre Boss, Senior, Informatics: Info Assurance & Cybersec
Jimmy Nguyen, Senior, Informatics (Human-Computer Interaction)
Chelsea Wang, Senior, Psychology, Informatics
Nicole Simone Kuhn, Junior, Informatics
McNair Scholar
Mentor: Saba Kawas, Information School
Mentor: Katie Davis, Information School

What role does technology have in encouraging children to engage with the outdoors and nature? Drawing on theory related to interest development and research on mobile learning technologies, we derived a set of four design principles to support the development of children's personal interest in nature: personal relevance, focused attention, social interactions, and opportunities for continued engagement. We applied these principles to design NatureCollections, a mobile

application that allows children to build, curate, and share nature photo collections. We conducted an observational study comparing the behaviors of 81 pre-teens in middle school aged 11-13 years who either used NatureCollections or a mock-up camera app to take pictures of their surroundings. NatureCollections succeeded in directing children's attention to and promoting close observation of the natural elements in their surroundings, and prompted playful, nature-related conversations with peers and parents.