TRIWiC 2020 Detailed Schedule

Friday, February 14, 2020

11:00 - 12: 30 pm   Registration   Hallway

12:30 - 2:00 pm   Lunch & Keynote: Rebeccah Hunter   Quads

KEYNOTE 1: I Landed My Dream Job at 26, Wait I Did What?!
Invited Speaker: Rebeccah Hunter, Associate Software Engineer at Ansible by Red Hat

ABSTRACT: I started working at Red Hat on the Ansible Tower team shortly after I turned 26. This may not seem very early, but in reality this is only my second job out of college. Why is it my dream job? I'll tell you all about why it is, how I got the job, and what happens now. I'll also briefly cover what it means to be a woman in open source and why you should care about that too.

2:00 - 3:00 pm   Speed Mentoring   Quads

ABSTRACT: Need mentoring? Reach out and seek advice from other women who have had experience in the fields of Information Technology or Computer Science

3:00 - 3:30 pm   Panel 1   221

PANEL 1: Truth Talks from Young Women in Tech
PANELISTS: Bria Williams, Berea College and Shadia Prater, Accenture

KEYWORDS: Women of Color, Post-Baccalaureate, Advice, Motivation, Young Women in Tech
ABSTRACT: This panel will focus on young women within the first five years of their professional careers or education in technology. Starting a career in this field can be daunting and anxiety-inducing, especially as we inevitably compare ourselves to our male counterparts. The young women in this panel will be sharing their experiences in their undergraduate years, the obstacles they overcame as they worked towards getting their first jobs, and finding out what path they wanted to pursue. There are many factors that can get in the way of reaching success in this field. The goal of our panel is to inspire those who are currently in undergrad or have just finished their baccalaureate studies to continue persevere until they reach their full potential. The young women on this panel are either currently in or have experienced the transition phase from college to the start of their careers. We want to answer questions about making goals and not psyching your own self out of reaching them. The panelists will share their fears and anxieties that made them hold themselves back from following their dreams. The panel will be an unfiltered and honest space to openly discuss the hardships and triumphs of starting a successful career in tech.

3:00 - 3:30 pm   Panel 2   229

PANEL 2: Moms in Tech and Work
CHAIR: Viji Ramasamy, PANELISTS: Eva Bradshaw, National Council for Women in Technology; Amy Justice, Dean Dorton; Hailey Barnett, Berea College; Cheri Myers, Northern Kentucky University; Candice Van Loveren Geis, Northern Kentucky University; Meghyn Winslow, Northern Kentucky University, Homeschooling Mom

KEYWORDS: Work Life Balance, Technology,Experiences
ABSTRACT: Panelists will give their experiences and advice to others interested in combining school/work with being a mom. Time will be set aside for audience questions.

3:30 - 5:00 pm   Job Fair   Quads

3:30 - 5:00 pm   Tech Talks 1   221

3:30 TECH TALK 1A: Using Science Fiction to Teach Ethics   221
AUTHOR: Judy Goldsmith, University of Kentucky

KEYWORDS: ethics, science fiction, teaching
ABSTRACT: Computer science faculty have a responsibility to teach students to recognize both the larger ethical issues and particular responsibilities that are part and parcel of their work as technologists. In this tech talk, we explore the use of science fiction as a tool to enable those teaching artificial intelligence to engage students and practitioners about the scope and implications of current and future work in computer science.

4:00 TECH TALK 1B: Socially Embedded Computing   221
AUTHOR: Jasmine Jones, Berea College

KEYWORDS: human-computer interaction, values in design, pervasive, computing social computing
ABSTRACT: When your computer isn't just a box with a screen, but a treasure, your companion, or even an extension of your body, how does this impact your interaction with it and through it? This talk gives an overview of how my research in human-centered computing investigates how embedded systems are perceived and used in social settings. I will use a series of real-world examples from my work with kids, families, and marginalized groups to highlight how social values and influences can be discovered and incorporated into the technology design process for positive impact.

4:30 TECH TALK 1C: Introduction to Agile Software Development   **221**
AUTHOR(S): Jennifer Partin, Raytheon

KEYWORDS: Agile, Software Development, Introduction
ABSTRACT: The purpose of this technical talk is to give the attendees an introduction to Agile software development. Agile is currently one of the most popular software development processes, however it is rarely taught in college courses. I plan to go over the basics of what Agile is, the pros and cons of using Agile vs other common software development methodologies, things to look out for, and have time for examples and questions at the end. The goal of this technical talk is not to have the attendees certified in Agile software development, but to give them an initial basic understanding.

3:30 - 5:00 pm   Tech Talks 2   229

3:30 TECH TALK 2A: How Computer Science Fits Into the Manufacturing and Maker Mindset
AUTHOR(S): Sheri McGuffin, AdvanceKentucky   **229**

KEYWORDS: manufacturing, makerspace, CS, mindset
ABSTRACT: Over the next decade, it is projected that nearly 3.5 million manufacturing jobs will be open and available, just when today's K-12 students are entering the workforce. However, it is also projected that about 2 million of those jobs will go unfilled. This 'skills gap' can partly be attributed to students' negative image of the manufacturing industry and their lack of STEM skills, which are essential for the growing jobs in advanced manufacturing.

With more complicated technological processes integrated into manufacturing businesses to be competitive in a global economy, computer science has risen to the forefront in preparing the workforce for the needs of today and a rapidly changing future. K-12 schools, with their emphasis on critical thinking and workforce development, have recognized this need and implemented tools such as Makerspaces and computer science curriculum throughout the K-12 continuum. This talk highlights some of the ways K-12 schools in Kentucky are addressing the advanced manufacturing workforce needs and how teaching and learning computer science at even the most basic levels from the beginning of the educational experience can have an impact in transforming students to think with a Maker Mindset.

4:00 TECH TALK 2B: How To Negotiate Salary for Women in Technology   **221**
AUTHOR(S): Jacqueline Boggs, Berea College

KEYWORDS: salary, negotiate, women, technology, income equity
ABSTRACT: This talk will outline and explore what I have learned about negotiating salary as a woman in the technology field. I will speak about women evaluating and knowing their worth, how to research information which provides comparable salaries for similar organizations, verbal and non-verbal negotiating strategies, using leverage, motivational techniques and ideas on how to know if women's salaries are comparable to that of men in the same field.

4:30 TECH TALK 2C: Women in Cybersecurity - Are you on the fast track?   221
AUTHOR(S): Amy Justice, Dean Dorton

KEYWORDS: women, cybersecurity, STEM, build skill sets, be motivated, find your niche, teamwork
ABSTRACT: This talk is geared around inspiring women to work in cyber-security. Statistics say that females account for just 10% of the total population of personnel in cyber-security in the US. How did this happen? And what can we do to get more women involved in STEM? This talk will focus on determining how you can develop the right skill sets to work in a typically male driven environment. Find out what you can do to set yourself apart. Determine your niche in cybersecurity, and motivate yourself for success!

Cybersecurity is more than TV shows like Mr. Robot that focus on black/white hackers. We're going to dive into the many facets of cybersecurity, and understand how cyber teams work together from various backgrounds and skill sets (security engineering, physical security, threat intelligence, security operations, governance, risk assessment, and security awareness education to name a few).

5:00 - 5:30 pm   Panel 5   221

5:00 PANEL 3: Queer in Tech   221
CHAIR: Jan Pearce, Berea College

Author KEYWORDS: LGBTQ+, intersectionality, lesbian, gay, transexual, queer
ABSTRACT: Panelists will speak to questions about the importance of seeing LGBTQ+ role models in the IT workforce, how diversity drives innovation, and how we can measure diversity. The panel will also address intersectionality challenges faced by panelists and how they have responded.

5:30 - 7:30 pm   Dinner & Keynote: Margaret Burnett   Quads

KEYNOTE 2: Doing Inclusive Design: From GenderMag to InclusiveMag
INVITED SPEAKER: Margaret Burnett, Distinguished Professor and Software Engineer, Researcher in Human-Computer Interaction, ACM Fellow

ABSTRACT: How can software professionals assess whether their software supports diverse users? And if they find problems, how can they fix them? Although there are empirical processes that can be used to find "inclusivity bugs" piecemeal, what is often needed is a systematic inspection method to assess software's support for diverse populations. To help fill this gap, we developed GenderMag, a method for finding and fixing "gender inclusivity bugs" -- gender biases in software interfaces and workflows. We then introduced InclusiveMag, a generalization of GenderMag that can be used to generate systematic inclusiveness methods for other dimensions of diversity. In this talk, we present the latest results of our work to bring inclusiveness to software itself.

8:00 - 10:00 pm   FRIDAY NIGHT ACTIVITIES

8:00 - 10:00 pm   Crafts   Quads

8:00 - 10:00 pm   Board Game/Cards   221

8:00 - 10:00 pm   Game and Dev Club   229

Saturday, February 15, 2020

8:30 - 9:00 am   Poster Session   Quads

POSTER 1: Transformation as a Defense to Adversarial Attacks against Deep Neural Network
AUTHOR(S): Rabina Phuyel, Berea College

KEYWORDS: Machine Learning, Adversarial Attack, Transformation, Deep Neural Network
ABSTRACT: Machine learning models, including deep neural networks, miss classify adversarial examples which are formed by applying small but intentionally perturbations to attack the model created from the data set, which results in the model outputting an incorrect answer with high confidence. Early attempts at explaining this phenomenon focused on nonlinearity and over fit- ting. Our contribution includes creating an ensemble of the transformed model and the defense mechanism against these attacks. We used a simple and fast method of generating adversarial examples and also simple MNIST dataset.

POSTER 2: Increasing a User's Attention via Real-Time Bio-Feedback of Classified Mental States Derived from Wearable EEG and Neuromorphic Computing Prototype
AUTHOR(S): Anastasiya Chapko and Rashmi Jha, University of Cincinnati

KEYWORDS: EEG, electroencephalography, ANN, artificial neural network, CNN, convolutional neural network, computer engineering, computer science, neuroscience, machine learning, brain imaging, classification, bio-feedback, biofeedback
ABSTRACT: EEG (electroencephalography) maps brain activity by recording the summed electrical signals of different brain regions through non-invasive electrodes placed on the wearer's scalp. EEG headsets are relatively common and cheap compared to other brain imaging equipment, and they have the added benefit of being mobile as the electrodes and EEG board can be contained in the headset. ANNs (artificial neural networks) are loosely based on biological neural networks. ANNs are usually implemented in software, and they have "neurons" to process signals and "synapses" to give the connections carrying those signals weights. Specifically, CNNs (convolutional neural networks) are shown to be useful in accurately classifying time-series data like EEG recordings.

These two concepts are brought together to create a prototype which can read in EEG-based brain activity of a user, classify the user's mental state, and provide bio-feedback to that user. One immediate application of this project is related to improving a user's levels of attention. The goal is to record brain activity using an EEG headset, send that activity in real time to an offline ANN trained in classifying the wearer's attention level, and providing bio-feedback to the wearer when they lose focus. In the short term, this system should decrease the duration of each unfocused event while the system is being worn. In the long term, this system should decrease the number of unfocused events and/or decrease the duration of each unfocused event when compared to levels before the intervention (even when the system is no longer being worn).

POSTER 3: The Effects of Undergraduate, Peer-to-Peer Teaching Assistant Experience
AUTHOR(S): Azis Toktobaev, Berea College

KEYWORDS: Undergraduate Teaching Assistant, Teaching Assistant, Berea College, Computer Science Department Teaching

ABSTRACT: In the United States, most of the students who work as Teaching Assistants for undergraduate students must be pursuing their master's or doctoral degrees. Berea College is the only top school in the United States with a full-tuition promise for its students and students are required to work at least 10 hours per week on its campus. So, for the last three semesters, I diligently worked as the co-lead Teaching Assistant for the Computer Science department. I lead 25 assistants and work with professors in managing Software Design and Implementation, Data Structures and Algorithms courses. I am proud to say that by the time I graduate I will have over 1,000 hours of teaching, tutoring and labor-related research experience in Computer Science, having worked under the supervision of 4 Ph.D. professors. The poster presentation will highlight the learning curves of our students' undergraduate teaching assistant experience, the effects of the program on their own undergraduate studies and the perspectives of the department's professors.

POSTER 4: Embedded Omeka Support for Appalachian Art History
AUTHOR(S): Elaheh Jamali and Emely Alfaro Zavala, Berea College

KEYWORDS: Omeka Classic, Appalachia, Art-history, Digital Humanity, Drawings, Online Exhibits

ABSTRACT: Berea College has a rich history in the study of literature, music, and art. Many students that attended Berea College were from Appalachia after World War II, and one of the classes that the students took during their time at Berea required them to draw their home community. Over the four-decade life of this course, some 7,000 drawings were saved that reveal glimpses of Appalachian life over the last half of the twentieth century. The ability to use these digital resources and drawings in disciplines like art history are a little bit behind the curve in embracing digital humanities.Dr. Jan Pearce and Dr. Chad Berry first saw the need for collaboration between the two departments (Computer Science and Appalachian Studies) to initiate the mappalachia.org website. As time has gone by, new ideas and technologies have appeared, and they decided that there was a need to refactor the Mappalachia.org website. Students Emely Alfaro and Elaheh Jamali have taken the task of developing digital exhibits in order to make the Mappalachia drawings accessible to scholars, alumni, and the broader public for a second time around. In order to best meet the needs of users and clients, these students have done sketching, paper prototyping, and they are now in the final stage, which is web development. The primary technical tool for the development has been Omeka Classic. Omeka Classic is a web publishing platform for sharing digital collections and creating media-rich online exhibits adhering to Dublin Core standards.

POSTER 5: Predicting Default and Delinquency
AUTHOR(S): Emilie Dibbin, John Carroll University

Author KEYWORDS: credit, default, delinquency
ABSTRACT: Credit risk assessment has been the focus since the financial crises seen in the U.S. in 2008, and Taiwan in 2006. This has brought accords like Basel III and Internal Rating Based approach into the marketplace to prevent future financial crises from occurring and effecting consumer behavior. Chance of default and delinquency play an intrinsic part in determining credit risk for both the financial institute and an individual. Determining credit risk for an individual early on is important to not repeat a major crisis management that happened post-recession. Machine learning algorithms may offer an improvement in determining default and delinquency. The objectives of this analysis are to implement an array of machine learning algorithms such as random forest, logistic regression, and k-means clustering to improve credit risk component predictions i.e. default and delinquency. Improving credit risk assessment using machine learning may provide a more robust and specific risk for the consumer and financial institutions.

POSTER 6: Affective Model Based Speech Emotion Recognition Using Deep Learning Techniques
AUTHOR(S): Dr. D. Karthika Renuka, C. Akalya Devi, G. Poovandiran, Sp Rajamohana, R. Kirupa, PSG College of Technology, and Krishnaprasad Thirunarayan, Wright State University

KEYWORDS: Emotion recognition, Human Computer Interaction, Speech, RNN, LSTM
ABSTRACT: Human beings express emotions in multiple ways. Speech is a powerful form of communication that is accompanied by the speaker's emotions. Specific prosodic signs, such as pitch variation, frequency, speech speed, rhythm, and voice quality, are accessible to speakers to express, and listeners to interpret and decode the full spoken message. This paper aims to establish an affective model based speech emotion recognition system using deep learning techniques such as RNN with LSTM on German and English Language datasets .The results obtained justifies that the proposed deep learning based RNN-LSTM model for emotion recognition has improved the accuracy of emotion classification.

POSTER 7: Designing Safety Applications
Berucha Cintron, Berea College

KEYWORDS: design process, safety, manufacturing
ABSTRACT: "Safety First, Quality Always." In manufacturing, safety is highly infused in the work culture and accessibility, or ease of use, to the tools employees need to support this system is fundamental in promoting and maintaining such an atmosphere. This poster presentation will cover the design process of creating applications that will equip employees and leaders of the plant with a restructured approach for contributing and ensuring the safety of Lilly Del Caribe.

9:00 - 10:00 am   Workshop 1   Quads

9:00 WORKSHOP 1: GenderMag Workshop   Quads
AUTHOR: Margaret Burnett, Distinguished Professor and Software Engineer, Researcher in Human-Computer Interaction, ACM Fellow

ABSTRACT: At its core, GenderMag pinpoints ways software can be intolerant of certain problem-solving styles. To learn GenderMag by doing, in this one-hour workshop we'll work together to do a GenderMag evaluation on a system in wide use in universities. Attendees will leave with the ability to do GenderMag evaluations on the software and other IT that they create as part of their professions or personal lives.

9:00 - 10:00 am   Workshop 2   221

9:00 WORKSHOP 2: Programming Wearable Lights using Arduino Neopixel Library
AUTHOR: Jaimie Kelley, Denison University   221

KEYWORDS: Wearable computing, Adafruit Gemma, Arduino
ABSTRACT: In this workshop, participants will learn how to use the Arduino Neopixel Library to program sequentially connected Adafruit Neopixel RGB LEDs. This workshop will also discuss project design for wearables in context of fashion and circuitry design.

10:00 - 11:30 pm   Tech Talks 3   Quads

10:00 TECH TALK 3A: Cybersecurity in Research: Keeping Us Safe Today and Tomorrow
AUTHOR(S): Sheikh Ghafoor, Tennessee Tech   Quads

KEYWORDS: cybersecurity, privacy, research
ABSTRACT: As the building blocks of our society become increasingly technologically dependent, efforts in cybersecurity education, research and outreach are becoming even more essential. Today, with use of technology becoming seamless with modern lifestyle, the abuse of technology also proliferates comparably in society. There are extensive initiatives and opportunities in cybersecurity that lead way to ensure that our present and future experiences with cyber is safe and secure. In this talk, we will present how our cybersecurity center has been working with our faculty and student teams in research efforts in different areas of cybersecurity and privacy from IoT and Cyber Physical Systems, financial and health care sector to network of all "smart" things.

10:30 TECH TALK 3B: It Takes a Village to Make a Difference: Increasing Diversity in Cybersecurity
AUTHOR(S): Ambareen Siraj, Tennessee Tech University/   **Quads**
Women In Cybersecurity (WICYS)

KEYWORDS: cybersecurity, diversity, WiCyS
ABSTRACT: It is common knowledge that the cybersecurity pipeline is not producing enough professionals to meet the national demand. Compounding the problem of the security professional shortage is the fact that women's representation in this male-dominated field is alarmingly low. With support from National Science Foundation, (Award #1303441) in 2013, we initiated effort to bring together women (students/faculty/researchers/professionals) in cybersecurity from academia, research and industry for sharing of knowledge/experience, networking and mentoring. Over the last 7 years, with overwhelming support from the greater community at large, WiCyS has become a national effort to support broadening participation of women in cybersecurity. This talk will present how we all worked together to move the needle from 11% to 20% but still have a long way to close the gender gap in cyber.

11:00 TECH TALK 3C: Dwelling in the Dark Web   **Quads**
AUTHOR(S): Susan Jeziorowski, Tennessee Technological University

KEYWORDS: Dark Web, Tor, Anonymity, Cybercrime
ABSTRACT: Anonymity tools have grown increasingly popular among web users in response to regular government surveillance, Internet censorship, and capitalistic data collection among other reasons. Such tools promote web user privacy,but also provide an avenue for cyber criminals to conduct illegal activities on the Dark Web without the fear of consequences. In this presentation, attendees will discover what the Dark Web is, how it is accessed, and what it is used for. Furthermore, attendees will learn about the criminal activity that is enabled by the Dark Web and the challenges cyber investigators face when dealing with anonymous networks. Finally, the presentation will conclude with a discussion of current Dark Web research, resources, and best practices.

10:00 - 11:00 pm   Tech Talks 4   229

10:00 TECH TALK 4A: Machine Learning Obstacles to Improve Drug Binding Predictions
AUTHOR(S): Sally Ellingson, University of Kentucky   CANCELLED

KEYWORDS: machine learning, overfitting, drug binding, drug discovery
ABSTRACT: In our digitalized, data-driven world, there is a wealth of knowledge available that is beyond the processing power of an individual researcher or even team of researchers. The abundance of available biomedical data combined with the massive computing power we have available today with leadership class supercomputers provides great opportunities to advance computational drug research. A tool that reliably predicts protein and drug binding would revolutionize the pharmaceutical industry. An accurate representation of polypharmacological networks would provide a wealth of knowledge and

insights on drug repurposing, side-effect prediction, and drug efficacy. This would lead the way to personalized polypharmacological networks including individual's genetic variations resulting in a breakthrough for precision medicine. However, there are still many obstacles to overcome when it comes to utilizing massive computational power and ensuring accuracy of our predictions.

Using machine learning to score potential drug candidates may offer an advantage over traditional imprecise scoring functions because the parameters and model structure can be learned from the data. However, models may lack interpretability, are often overfit to the data, and are not generalizable to drug targets and chemotypes not in the training data. Benchmark datasets are prone to artificial enrichment and analogue bias due to the overrepresentation of certain scaffolds in experimentally determined active sets. Datasets can be evaluated using spatial statistics to quantify the dataset topology and better understand potential biases. This talk explores data, methods, and potential data biases relevant to computational drug binding predictions.

11:00 TECH TALK 4B: Developing Young Engineers   229
AUTHOR(S): Jennifer Partin, Raytheon

KEYWORDS: Developing, Teaching, Diversity
ABSTRACT: One of the first steps of getting more diverse talent in the workforce is creating awareness of the field. Introducing students to computer science at a young age can help diversify our field, however it also has many benefits to the children beyond career options: programming helps develop problem solving skills, thinking skills, and expands creativity. Volunteering your time to developing young engineers is both beneficial to the community and your own thinking skills, as the student's questions help you break down programming into small, easy to follow steps. There are many different programs available to help teach students how to code,I will go over one of the options and do a quick demonstration on how you can teach the next generation of software engineers.

11:00 TECH TALK 4C: Artificial Intelligence and Data Science! So What?   229
AUTHOR(S): Eun Mi Kim

KEYWORDS: Artificial Intelligence, Machine Learning, Data Science
ABSTRACT: Amazon Alexa, Apple Shri, and Google Assistant; no matter whether you are already aware of it or not, Artificial Intelligence (AI) or Data Science (DS) is already involved in our daily life. However, there is a lack of understanding what they are and how they can affect our current lives and near future. In today's talk, I will briefly introduce the basics of AI and DS as well as current research trends, so that audiences can have better ideas and understanding about these new technologies.

10:30 - 11:00 am   Panel 4   221

10:30 PANEL 4: Computer Science Career Paths – Sharing Our Journeys, Hearing Yours
CHAIR: Eva Bradshaw, NCWIT   **Quads**

KEYWORDS: career, career path, graduate studies, IT professional
ABSTRACT: Panelists will share their journeys with participants and encourage discussion and questions. Varied career paths include PhD, IT industry, university instructor and support staff at higher ed institution.

11:00 - 11:30 am   Panel 5   221

11:00 PANEL 5: First Jobs   **Quads**
PANELISTS: Adrianne Roberts, Berea Student, Sylvia Guard, NKU Alumma, Rebeccah Hunter, Shadia Prater, Berea Alumna, Maureen Doyle, Northern Kentucky University

KEYWORDS: First job, Recent graduates, Technology
ABSTRACT: Recent alumni will share their experience searching and obtaining their first job. They will also discuss what life in the tech industry is like. Time will be left for fielding questions from current students.

11: 30 - 12:30 pm   Lunch & Lightning Talks   Quads

12:30 - 1:30 pm   **Keynote: Maureen Doyle**   **Quads**

KEYNOTE 3: This is algorithms: Making Waves in Computing
Invited Speaker: Maureen Doyle, Northern Kentucky University

ABSTRACT: Dr. Doyle will discuss here career in algorithms and share success stories in computational computing.

1:30 - 2:00 pm   Closing Ceremony   Quads