SRI40: Student Research Innovations 2020

Special Track along with eLmL 2020
The Twelfth International Conference on Mobile, Hybrid, and On-line Learning

November 21, 2020 to November 25, 2020 - Valencia, Spain
https://www.iaria.org/conferences2020/CfPeLmL20.html

Dr. Melissa Stange
Professor of Computer Science
Lord Fairfax Community College
Middletown, Virginia, USA
mstange@lfcc.edu
SIR40 Chair/Coordinator

Dr. Melissa Stange received here PhD from Walden University, Minneapolis, Minnesota, USA. She is Program Lead and Professor of Computer Science. Her research areas are curriculum design, K-12 Computer Science inclusion, decision science, computing for users with disability, cybersecurity, and importance of undergraduate research and publication.
About the SRI40 Special Track

Goal
• To provide students with an opportunity to share their research to gain valuable international feedback on their research.

Topics of Interest
• Cybersecurity
• Contrasting student and academic perspectives and experiences of student engagement
• Smart Curriculum Design
• Internet of Things in CS Education
• Modeling Global Competencies for Online Education
• Simulation/Virtual Reality
• Blockchain
• Computer, Technology, Education
Summary of Contributions (1)

**Title:** Incorporating Cyber Competencies in K-12  
**Author:** Rachel Stange  
**Paper ID:** 58008

- Educators & Staff Cyber Training  
- Cyber Taskforce collaboration  
- Relevant and relatable speakers at a local level  
- Continuous improvement and generational examples  
- Decrease in K-12 cyber distress  
- Increase interest in Computer Science and Cybersecurity courses
Summary of Contributions (2)

**Title:**
Exploitation of Radio Frequency Technologies Through the use of Microcontrollers

**Author:** Daniel Joachim

**Paper ID:** 58009

- An attempt to break the encryption of the German “Schoko Ticket” and District of Columbia “Metro” MiFARE cards
- The Arduino Uno Rev3 was the microcontroller paired with the RFID-RC522 RFID reader-writer to conduct tag enumeration and reading/writing
- DESFire encryption implementations that surpass the devices used to enumerate the cards during the time of research
Summary of Contributions (3)

**Title:** Fingers And Toes: The Hidden BioMetric Story

**Author:** Rachel Stange

**Paper ID:** 58010

- Fingerprints & Toeprints use the same classification systems
- Blood Sibling fingerprints are similar with slight difference in classifications
- Blood Siblings have similar toeprints created during fetus development, but may be altered by life events
Future Challenges

Instructional Support
• How to financially support students researchers with shrinking budgets?
• How to conduct research safely during pandemics in confined spaces?
• How to justifying traditional in-person presentations and conferences?

Undergraduate Research
• How to develop and maintain undergraduate research programs?
• How to increase undergraduate research submissions?
• Ways to include research methodology within undergraduate course work?

Increasing Networking
• How to share benefits outside of academics?
• Ways to increase financial support from industry?
• What is needed to increase the number virtual student research teams?