

Enhancing Security Education in Hybrid Mobile and Internet of Things Firmware through Inclusive, Engaging, Learning Modules (E-SHIIELD)

Challenge:

- The unprecedented growth of IoT and Hybrid Mobile apps has not been matched by adequate consumer awareness or preparedness to ensuing attacks
- Gaps in advanced cybersecurity education need to be filled to strengthen the nation's cybersecurity workforce

Solution:

- Advanced Cybersecurity Course Development
- Application of Cutting-Edge Pedagogical Techniques, Robust Development & Deployment Plan
- Inclusivity in Curriculum, Outreach and Broad Dissemination
- Creating a Symbiotic relationship between teaching and research

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Criminal Investigations: an

interactive, gamified webbased framework to teach and

assess cybersecurity skills in an

engaging, inclusive manner,

"SmartHome Lab" at UNCC. This lab is designed to mimic an actual "smart" living room and furnished with state-of-the art smart devices, research and office equipment and library.



A flipped-classroom course designed to explore unconventional method of class-sourcing penetration testing of IoT devices and to provide solid handson experience and access to cutting-edge technology.

Scientific Impact:

- Stackable course modules in Hybrid Mobile App and IoT Firmware security
- NSA/DHS CAE integration
- Virtual lab development
- Engaged & Inclusive Pedagogy
- Evaluation of content & pedagogy

Broader Impact and Broader Participation:

- K-12 IoT Roadshow
- Faculty Training NC Universities
- Student Theses & Mentoring
- Broad Dissemination
- CCI SmartHome Laboratory
- ACM-W, WiCyS
- Cybersecurity culture