SaTC 2019 PI meeting breakout group report summary: Innovation in Cyber Security Education

Co-leads: Bhavani Thuraisingham, Latifur Khan, Neil Gong, Harini Ramaprasad

Agenda

- 24 Participants
- Welcome and Objectives (Bhavani Thuraisingham, Yang Li)
- Education Innovation in AI and Security (Neil Gong)
- Writing a Successful NSF Education Proposal (Latifur Khan)
- Discussion on Innovation in Cyber Security Education
- Questions Discussed
    - **What are the potential innovations in Cyber Security Education?**
    - **What are Challenges in developing an Innovative Cyber Security Education Program?**
    - **What are innovations from an education perspective on integrating Artificial Intelligence and Cyber Security?**

Potential Innovations in Cyber Security Education - I

- Methods for Delivering and Disseminating Curriculum
  - Repeatability/reusability of the educational artifacts – not just for one course or university, but for the community
  - Collaborative Education – consortium of universities offering courses – take advantage of the best expertise
  - Modularize courses so that educators can adapt, pick and choose
    - Create templates/frameworks to help educators plan & design modules
  - Information Sharing – how can we best share our courses, labs & results?

Potential Innovations in Cyber Security Education - II

- Methods for Teaching & Engaging Students in Cyber Security Education
  - Using visualization
  - Building apps
  - Using micro-learning
  - Using Games and Gamification
  - Using Storytelling (engaging way to make Cyber Security socially & culturally relevant)

Challenges in Cyber Security Education

- How do we handle a vast number of pre-requisites in today's environment?
- Interdisciplinary education is a must – e.g., Security for Autonomous Vehicles; Social and Behavioral Science, Policy/Governance
  - Need not only cyber security expertise but also expertise in say engineering disciplines, social/ management sciences
  - Incorporate cyber security concepts into other disciplines
  - How do we provide an interdisciplinary education – curriculum for every area?
  - Mix and match modules?
- What methods should we use to teach diverse groups of people?
  - Women, Disadvantaged Minority Communities, LGBTQ, Neurodiversity (Autism), Veterans, Teachers, People with Disabilities, K-12 (K-99?)
  - How do we broaden access to cyber security education?
  - How do we expand the current supply of cyber security instructors?

Directions

- Produce Workshop Report as a team
- Identify 5-10 Innovative Approaches and elaborate on them
- Identify important education areas
- Take advantage of current curriculum sharing mechanisms (e.g., Clark.Center) and possibly improve them