

Software Technologies Kitchen

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Project Team Profile

- PI: Shishir K. Shah and Ioannis A. Kakadiaris, University of Houston
- Project Start Date: July 2016
- Anticipated End Date: June 2021
- Project personnel:
 - Li Wei, Graduate Student Assistant
 - Fatima Daha, Graduate Student Assistant
 - Poonam Beniwal, Graduate Student Assistant

Problem Statement

- There is a growing need for STEM educated professionals who are aware of, and knowledgeable in, the challenges and technologies relevant for solving problems in complex operational environments relevant to national security.
- Subsequently, there is a need to provide resources for hands-on training and exposure in security and facilitation technologies relevant to biometrics, facilitating legal trade, cargo screening, situational awareness, and technologies for first responders.

Beneficiary / End User Profile: Jobs

- Technology solution analyst/developer at CBP OTD
- Engineer/Project Manager at Industry Sector supporting DHS mission

Beneficiary / End User Profile: Desired Gains

- STEM students with understanding of DHS mission set
- STEM students capable of developing technological solutions for CBP and DHS mission
- STEM students interested in pursuing career opportunities at DHS or entities supporting DHS mission

Beneficiary / End User Profile: Pain Points

- Not enough qualified STEM graduates entering the DHS and CBP workforce

Products & Services

- Develop and offer relevant coursework to support education of students in fundamentals of engineering design, problem solving, and design and testing of security solutions
- Educate students about the critical operational environments in applications relevant to homeland security
- Provide hands-on training in addressing real-world problems motivated by current and emerging challenges relevant to border security, and legal trade and immigration

Gains Created

- 20 students completed the developed course and 57% of the students reported increased interest in pursuing pursuing graduate studies or research in a HS related field

Pains Alleviated

- 20 students completed the developed course and 78% of the students reported increased interest in pursuing employment in a HS related field

Key accomplishments

- Outlined real-world problems in consultation with stakeholders that can serve as student projects
- Procured resources to support student projects
- Created a course structure for teaching and training

Transition Pathways

- Deliver developed course and training material
- Develop mechanisms for student internship to further their experience

Transition Challenges

- Building a partnership with entities that can offer internship and permanent career opportunities for students who complete developed training

Conclusions

- Building on experience and feedback after the first year, there is a need to:
 - Expand course material to diversify project topics to include additional technologies
 - Engage faculty across multiple STEM disciplines who can serve as mentors to student teams
 - Expand technological resources to support broader hand-on training

Disclaimer

- This material is based upon work supported by the U.S. Department of Homeland Security under Grant Award Number 2015-ST-061-BSH001. This grant is awarded to the Borders, Trade, and Immigration (BTI) Institute: A DHS Center of Excellence led by the University of Houston, and includes support for the project Security Technologies Kitchen awarded to the University of Houston. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Department of Homeland Security.