Overview

The VETS-HASTE project aims to establish a collaborative program for veterans with a focus on hardware security training and education through the *Pivots Track*. Our private and government sectors urgently need a well-trained hardware security workforce in the semiconductor and microelectronic fields. The design and development of modern semiconductor devices involve a complex and distributed supply chain. However, this complex process creates the possibility of introducing security vulnerabilities that can compromise the integrity of the entire system, whether intentionally or unintentionally. **Given that semiconductor chips are building blocks for any modern microelectronics system, development in hardware security is crucial to the proliferation or even adoption of microelectronics for critical applications**. However, there is a severe dearth of trained workforce despite the critical need for such talents. Effective hardware security education using a well-designed curriculum is essential to meet this need. Veterans, a significantly underserved and underrepresented group in STEM fields, can be the untapped resource for the advanced technology field particularly the hardware security industry given their qualities and skills such as hands-on experience, resilience, punctilio, and diverse backgrounds. This project is a joint effort among the University of Florida, Veterans Florida, and a group of industry partners with a strong hardware security focus, including Intel Corporation, Silicon Assurance, Inc. and Caspia Technologies, Inc. This project seeks to provide a unique experiential learning program for veterans, incorporating sound learning science theories, to create new opportunities for veterans to gain new skills and pathways into hardware security careers.

Intellectual Merit

Emphasizing hands-on learning informed by cognitive apprenticeship theory, the proposed program aims to educate veterans on crucial aspects of hardware security and prepare them for a career transition into corporate settings. UF and FICS possess exceptional qualifications to offer a training program of high quality in hardware and systems security due to their strong connections to the industry, extensive curricular efforts, robust research programs, and state-of-the-art lab facilities. The implementation of VETS-HASTE will address the growing demand to equip veterans with comprehensive education and training in hardware security, contributing to the delivery of an exemplary program on a national scale. There are five key features of VETS-HASTE: (1) it emphasizes hardware security education, an area that is not commonly covered in existing cybersecurity curricula and training; (2) it follows a cohort-based learning model to establish, maintain, and develop a sustainable and reciprocal online learning community where veteran students can exchange knowledge and support each other; (3) it offers extensive hands-on training incorporating in-situ modeling, helping veteran students comprehend the intricate workings of a complex system, encourages them to explore novel attack and defense strategies, and prepares them to apply the knowledge to solve real-world hardware security problems; (4) it provides students with a full-time two-month internship placement in industry locations, where they can work on given tasks independently and reach out for support from their mentors if needed; and (5) it segues to students' continuous development by emphasizing scaffolding, articulation, reflection, and self-exploration to equip students with the skills and knowledge as life-long learners.

Broader Impacts

There are multiple potential impacts of the VETS-HASTE Program: (1) Improving diversity and inclusion by increasing veterans' representation in the industry; (2) Enhancing national security by training veterans in hardware security; (3) Advancing the infrastructure for research and education by creating the industry-driven course and cognitive apprenticeship model as a template for future training programs and curriculum development; (4) Generating significant and enduring benefits for society by developing veterans' technological literacy and skills to lead in today's rapidly evolving workforce; and (5) Disseminating the project materials and outcomes through the release of our industry-driven course materials, and publishing project updates, designs, and outcomes in various venues to publicize the VETS-HASTE both of which will raise attention and interest among veterans' for training, development, and civilian transition into advanced technology careers.