



Thesis Defense

Computer Science Master's Program

“A User-centric Continuous Authentication Modality Evaluation and Selection Scheme”

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Abstract:

One of one-time authentication's most prominent vulnerabilities is the possibility of lunchtime attacks. In such scenarios, an adversary could exploit an unattended device with an active session and no measures are taken to prevent them from committing malicious acts. To address this issue, continuous authentication is utilized by continuously verifying whether an individual is a device's rightful owner through various modalities, with data sourced from sensors. In the current body of research within this rising domain, various single-modal and multi-modal continuous authentication systems exist, that focus on employing unique combinations of modalities and improving existing supervised learning models used to solve this classification problem. However, no solutions allow prospective continuous authentication users to obtain the most suitable combination of modalities given their unique circumstances. Therefore, in this thesis, we design a user-centric continuous authentication modality evaluation and selection scheme. The scheme employs a multi-criteria decision analysis model, which involves compiling a list of continuous authentication systems, modalities, and associated sensors. As part of this scheme, we design security, privacy, and usability frameworks to conduct systematic analyses of the list of sensors and modalities gathered, while considering the system's performance. The proposed scheme can be utilized to generate a ranked list of combinations of modalities appropriate for the user.

Date: Wednesday, May 29th, 2024

Time: 8:00 PM – 10:00 AM

Location: 14-232b

Zoom:

<https://calpoly.zoom.us/j/3789089237?pwd=YmtSM0RwYkdCN1FxTzFmY1IEWWtMZz09>

Committee: Dr. Fang, Dr. Beard, and Dr. Sisodia

