

Toward Age-Aware Continuous Authentication on Personal Computing Devices



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https://cse.usf.edu/~tjneal/projects/continuous_authentication.html

https://www.nsf.gov/awardsearch/showAward?AWD_ID=2039373

https://www.nsf.gov/awardsearch/showAward?AWD_ID=2039379

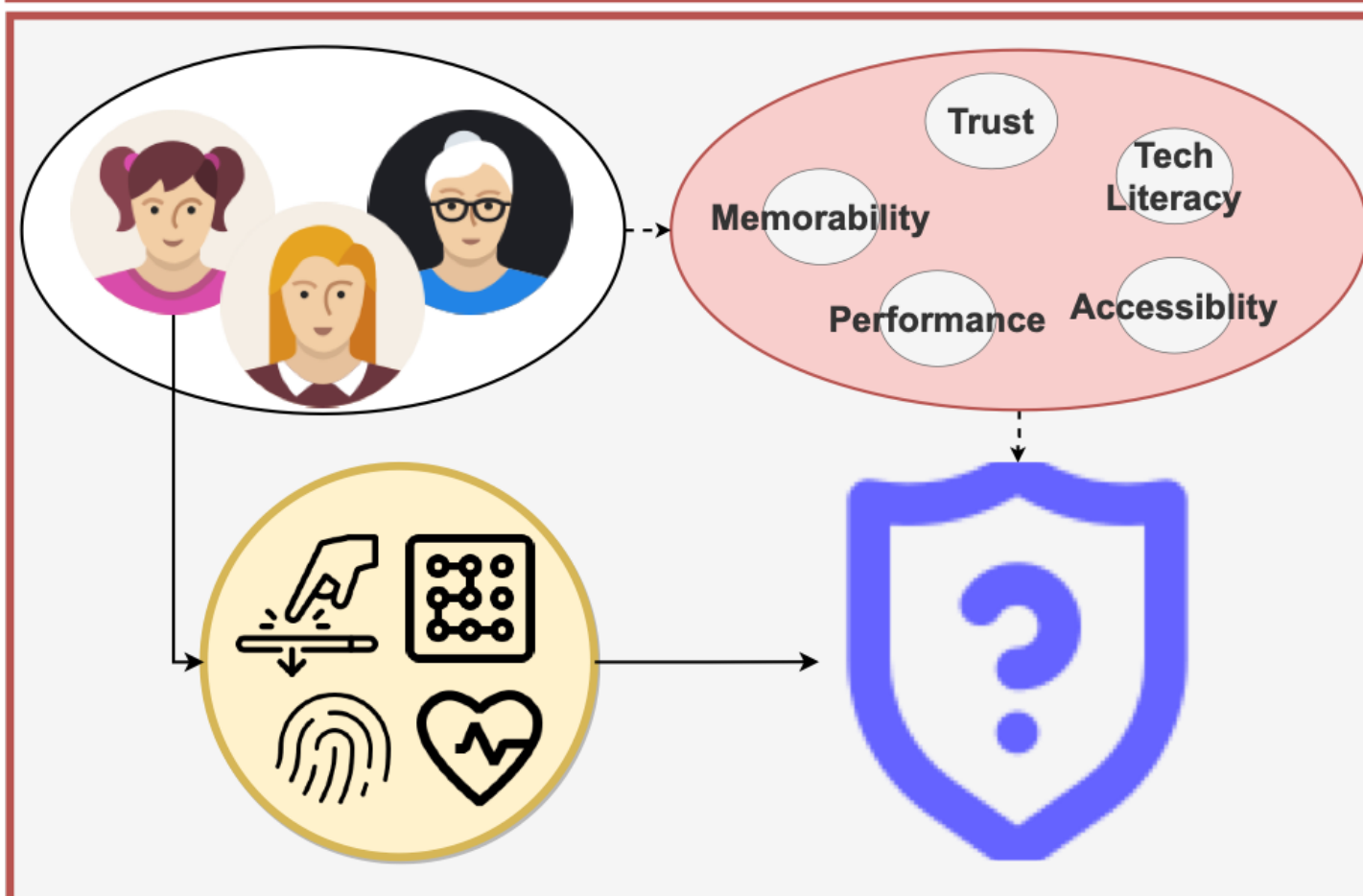
Challenge:

- A person's age impacts their recognition of and susceptibility to security and privacy risks
- User authentication systems are a first security checkpoint when accessing a personal computing device to ensure authorized device access
- **Current authentication systems rely on the user to directly initiate interaction, making these systems inaccessible and impractical to individuals across all age groups**

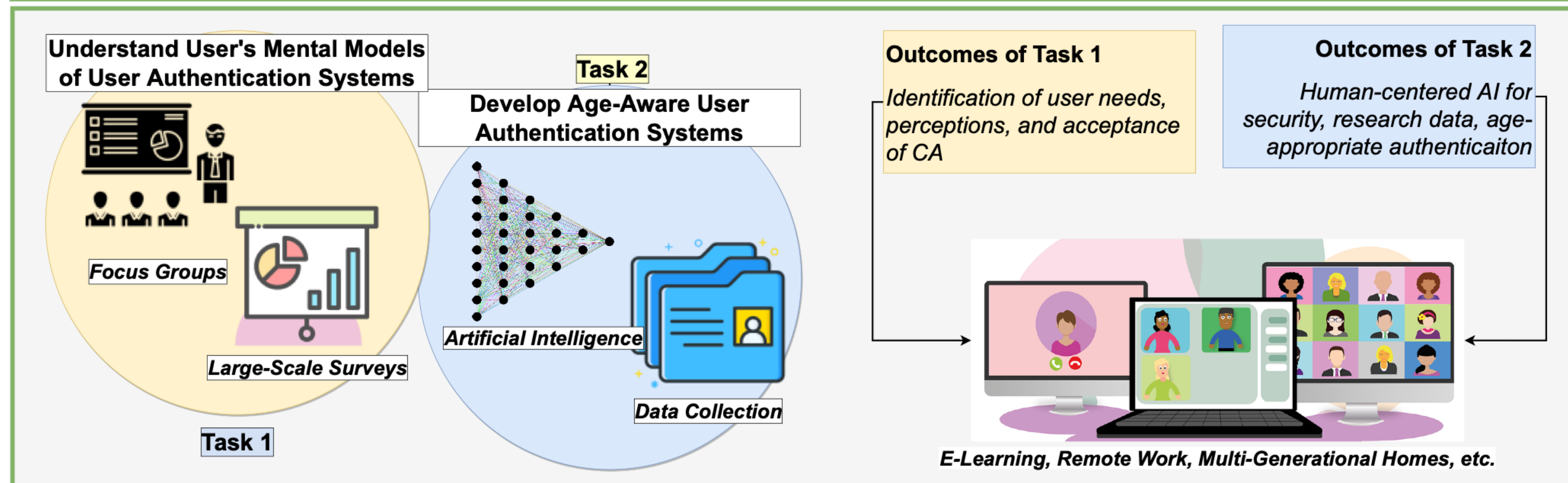
Solution:

- In continuous authentication (CA), the device observes the user's multimodal behaviors passively as input for authentication.
- **Research Objective: Design and evaluate user-centric age-aware CA models for computer workstations, mobile devices, and wearables.**
 1. Establish an understanding of users' mental models and acceptance of CA
 2. Create a conceptual model of user expectations and needs for authentication
 3. Collect behavioral and physiological data from children and adult for CA
 4. Train and evaluate AI models for age-aware CA.

Challenge



Solution

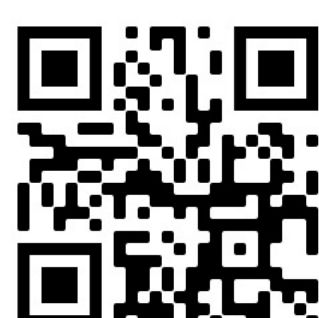


Scientific Impact:

- Advances understanding of users' mental models for usable privacy and security.
- Furthers understanding of the type, detail, and presentation of information a system is required to provide in order to enable users to create an accurate mental model of its context and states.
- Informs future research directions and applications by generating new insight on resource requirements for on-device CA.
- Advances the technical capabilities of multimodal ubiquitous computing systems.

Broader Impact and Broader Participation:

- Designing interactive usable privacy and security experiences from a user-centered perspective with age-appropriate transparency.
- Informs policy and increases public technological literacy.
- Training in AI, CS, Cybersecurity, and Human-Centered Computing for graduate and REU students.
- Provides course-related material for three existing courses, *Mobile Biometrics (USF)*, *Affective Computing (USF)*, and *Natural User Interfaces (UF)*.
- Publicly available software and data for the broader research community.



Award ID#: Collaborative Research: SaTC: CORE: Medium: Toward Age-Aware Continuous Authentication on Personal Computing Devices. Award #: 2039373, 2039379 (2021-2023)

