A Collaborative Government-University-Industry Model for a STEM Career-Education Pathway: Phase III: The R&D of Forensic Analytics and Biometrics

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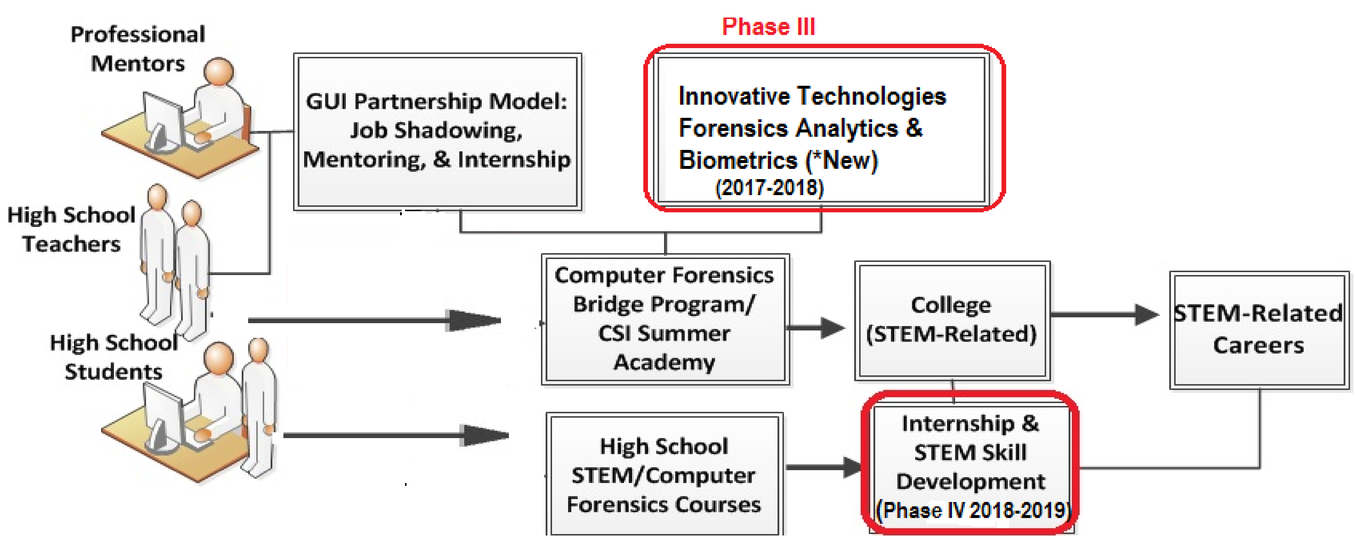


Two research questions to be answered by this experiment:

1. What is the accuracy rate of the keystroke biometrics for detecting unauthorized users?

2. What is the accuracy rate of the mouse biometrics for detecting unauthorized users?

METHODOLOGY

+ Design of this proposed experiment is quasi-experiment

+ Method is quantitative

+ Time scope is cross-sectional

+ Resulting data will be analyzed using the multivariate analysis of variance (MANOVA)

LAYOUT

+ Two separate student test groups – one valid user group and one hacker group

+ Both groups attempt to access email account and send two emails – only valid users are provided credentials

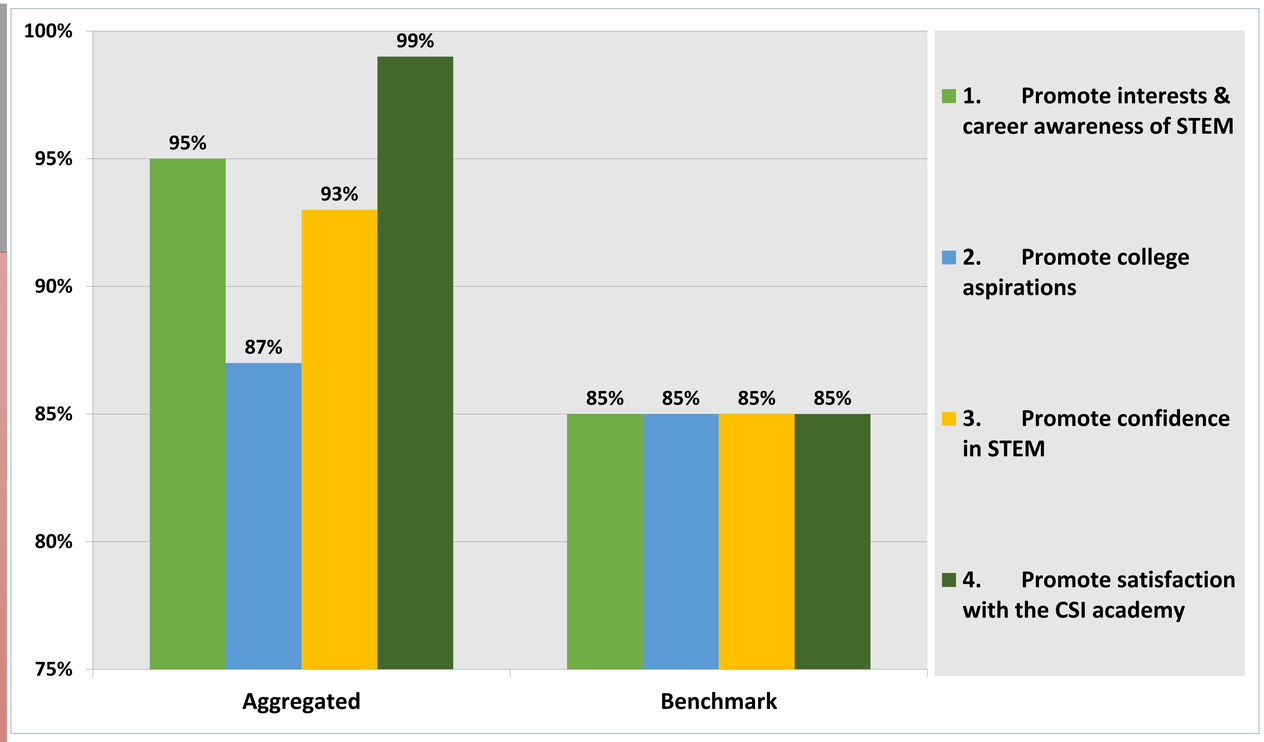
+ Keylogging software and mouse tracking software is installed on computer for both groups

RESULTS

+ Full trials not yet completed, so little data is available

+ Unable to find commercial mouse tracking software

+ Brainstormed ideas to alter experiment to still test hypothesis while avoiding these road blocks



Post-Survey Data Summary and Benchmarks: 2017 CSI Academy

(Program objectives aimed to influence 31 out of 36 (85%) attendees who agreed that the CSI Academy impacted their STEM career interests and college aspiration positively.)*

A Logic Model for the CSI Academy Program (2016-2018)

Bridge Program Components/Tool Kits

- Innovative teaching and learning kit
- Simulated crime scenes
- Field trips, job shadowing, & interaction with forensics professionals
- College Planning Resources Kit
- STEM Career Exploration Kit

Potential Short-Term Impacts

- Broad STEM participation by underrepresented demographic groups
- Awareness of STEM career opportunities
- Awareness of financial aid availability
- Awareness of college planning

Potential Long-Term Impacts

- Success in college
- Increase in STEM/Forensics degrees conferred
- Increase in intellectual capital
- Increase in our state's equitable STEM workforce

Lasting Implications of Our Proposed Experiment:

Our proposed experiment hypothesizes that hackers and valid users can be singled out based on their keystroke and mouse patterns. If this is true, our findings may lead to a new, innovative method to identify network intruders in order to keep computer systems safe and to protect valuable data and human lives.

BIOMETRIC	FINGERPRINT	FACE	HAND GEOMETRY	IRIS	VOICE
					
Barriers to universality	Worn ridges; hand or finger impairment	None	Hand impairment	Visual impairment	Speech impairment
Distinctiveness	High	Low	Medium	High	Low
Permanence	High	Medium	Medium	High	Low
Collectibility	Medium	High	High	Medium	Medium
Performance	High	Low	Medium	High	Low
Acceptability	Medium	High	Medium	Low	High
Potential for circumvention	Low	High	Medium	Low	High

Physiological Biometric Technologies (Source: Prabhakar, Pankanti & Jain, 2003)