WatchfuLock

Bracey, Dylan (School: Jesuit High School)
Burk, Joshua (School: Jesuit High School)

WatchfuLock is a near-impenetrable identity verification and security system that uses facial recognition and eye tracking to reliably determine authorized users from potential intruders. This system aims to offer a higher level of security to institutions seeking to protect restricted areas, especially ones with high-risk assets such as banks and high-security governmental institutions. Our engineering goal was to build and code a working prototype of such a device that uses simultaneous, multi-factor authentication of facial and password recognition. Through the combination of our code and assembled working prototype, WatchfuLock can both verify one's identity against existing passwords and create new passwords. Once activated to start password recognition, it passes the user's face through a neural network to determine which user, if any, is attempting to access the system. While continuously checking the user's facial identity, the system tracks the movement of his eye in vector form. It retrieves all that user's created passwords and checks the input password against them. If the passwords match, the user is granted access through the system. When activated to create a new password, WatchfuLock gets the user's identity through facial recognition and ensures he has the authority to create new passwords. Then, it records his eye movements and stores the tracked path in his profile for future use as a series of vectors. After extensive testing, WatchfuLock has met and exceeded all our engineering goals. It can effectively capture, store, retrieve, and verify user-input passwords and take appropriate action if needed as a result.

Awards Won:
Central Intelligence Agency: First Award: $1000 award