ADAPTIVE MULTI-FACTOR AUTHENTICATION SYSTEM

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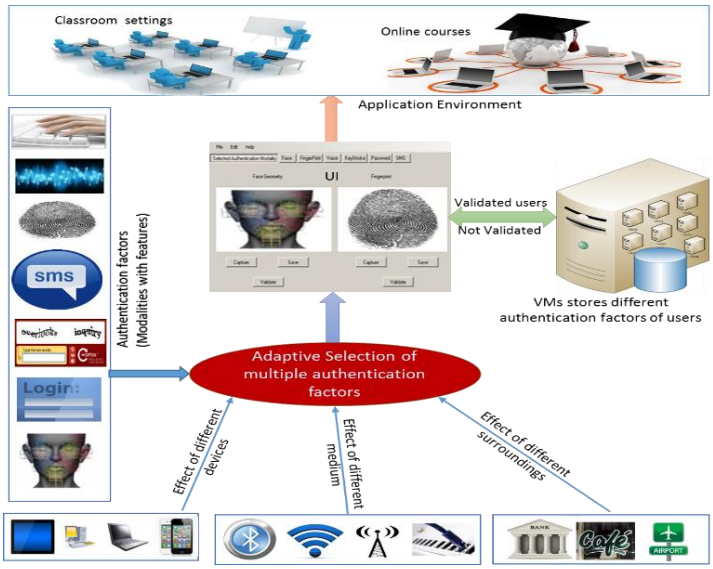
Multi-factor Authentication (MFA) is the current trend to genuinely identify authorized users (in multiple ways) through an authentication process via passwords, security token, biometrics, cognitive behavior metric, software/hardware sensors, etc. The goal of this project is to develop a multi-factor authentication system with adaptive selection of authentication modalities (with their features) in different operating environments making the selection strategy unpredictable to compromise.



The objectives of this project are to implement (i) a trust-based adaptive, robust and scalable software-hardware framework for the selection of authentication factors for continuous and triggered user authentication, (ii) design optimal algorithms to determine the security-aware authentication factors in time-varying environment. Accordingly, a subset of authentication factors will be determined (at triggering events) on the fly thereby leaving no exploitable a priori pattern or clue for adversaries. The proposed application of adaptive authentication will provide legitimacy of user transactions with an added layer of access protection that will not rely on a fixed set of authentication factors. This research will address the challenges of integrating the cyber-physical operating environment, user preference, types of applications, and mode of communication to adaptively select a subset of authentication factors (biometric and non-biometric, active and passive) that are most trustworthy for specific operational environmental settings. Potential Applications of Adaptive MFA include (but not limited to) online banking and other financial transactions, online educational programs and different training sessions, access to critical and sensitive electronic medical records; access to cloud services, etc.

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