Adaptive Multifactor Authentication (A-MFA) System
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Overall Concept
The Adaptive Multi-factor Authentication (A-MFA) framework identifies authorized users through an active authentication process using passwords, biometrics, cognitive behavior and other factors. This invention focuses on describing a framework where authentication factors are selected adaptively by sensing the users’ operating environment (connected devices, communication media, and surrounding conditions) as well as previously selected authentication factors.

Applications:
Continuous, high-confidence, identity authentication for:
- Banking, including online funds transfer
- Online testing in education and training settings
- Secure access to Electronic Medical Records

Deployable at different levels of Internet Computing:
- Application level (financial applications, email/business/personal applications, social applications)
- User level (root user, administrators, guest user)
- Document level (pdf containing application form, document containing proprietary information, image/video containing confidential and sensitive footage)

Sample Scenario

Advantages of Adaptive MFA System
Major advantages of the implemented framework over other existing MFA technologies:
- Assures user identity during an interactive session and beyond the initial log-in.
- If an authentication modality is compromised, the system can adjust to authenticate users with the remaining non-compromised modalities.
- It ensures avoidance of repetitive selections to authenticate users if the operating conditions remain the same.
- Scalable: New authentication modalities can easily be integrated to augment the existing sets of modalities.
- Flexible: Allows for generation of the operating/configuration parameters for the added authentication modalities as they become available.
- Just-in-time selection algorithm chooses optimal authentication modalities for the user’s operating environment.

Comparison with Other Existing MFA Approaches

Implemented Adaptive MFA System Performance

User Registration and Authentication GUI

Sample Authentication Trigger Events

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