

E-Voting: System Architecture for Secure Mobile Internet Voting

Conventional poll-site voting systems suffer from challenges from lack of mobility support for voters, voter inconvenience, election misconduct, and possible voter coercion. To address these challenges, an enhanced innovative secure mobile Internet voting system architecture was proposed. This architecture leverages the auto-coupling capability of near field communication, as well as the intrinsic merits of global positioning system, voice biometric authentication, and computational intelligence techniques. This architecture provides a theoretical mitigation of some of the electoral challenges outlined above as well as ensuring voter authentication. Several voice biometric based authentication algorithms, based on voice spectral features reduced by the Spectral Histogram of Oriented Gradients (SHOG) algorithm, were investigated with a neural network ensemble for pattern matching. The most promising set of algorithms were identified as being suitable for the voice authentication module of this Internet voting architecture.