

Multifactor authentication technique for a secure electronic voting system

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Abstract: Security of information is an important factor in an electoral process in a country. Recent pervasiveness of digitalisation in every aspect of human endeavour has evolved a drastic change in the voting process of democratic decision making. The shift from the existing conventional voting systems to electronic voting system will enable faster, convenient and more reliable means of franchising citizen's voting rights even in remote voting centres. But the problem of voters' authentication and protection from malicious attacks remains dominant. In this paper, we have used a multi-factor authentication technique using fingerprint biometrics and enhanced cryptographically secured smart card to provide a more secure e-voting system's authentication. The technique involves the combination of an enhanced Feistel block cipher and first moment feature extraction technique. The results obtained from experimental simulation shows the viability of the developed technique to avert common problems encountered in voters' authentication during the electioneering process in a digitally divided democratic environment.

Keywords: multifactor; authentication; e-voting; biometrics; cryptography; confidentiality; availability; smart; card.

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