

A Semantic Framework for Smart Cities

Thesis
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by

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Finding

A framework is proposed for smart city emphasizing on the understanding of the concept and interrelated functionalities as a layered approach. Framework focuses on the communication layer in the layered approach of the smart city principal. Mutual Authentication is a process to authenticate the identities of both the entities i: e - the client and the server with each other before initiating any kind of communication so that communication can be made between two legitimate entities only. This can be achieved through the trusted third parties or by using various cryptographic methods such as public key cryptography, and others. Random numbers are used in cryptographic applications for implementing the security. As the devices used under smart city environment are lightweight and have limited capabilities, they cannot perform complex mathematical calculations which requires huge amount of circuit gates. Hence researchers have the challenges to find some methods which are less complex and suitable for Lightweight Cryptography (LWC). Method for the random number generation is proposed which is suitable LWC. Proposed method is validated with the NIST test suite (which consists of 15 tests) to test the randomness of the generated bit sequences. Apart from this a Lightweight cryptography-based communication model is proposed for Transportation System.