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Application of a lightweight encryption algorithm to a quantized speech image for secure IoT

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The IoT internet of things being a promising technology of the future. It is expected to connect billions of devices. The increased communication number is expected to generate Data Mountain and the data security can be a threat. The devices in the architecture are fundamentally smaller in size and low powered. In general, classical encryption algorithms are computationally expensive and this due to their complexity and needs numerous rounds for encrypting, basically wasting the constrained energy of the gadgets. Less complex algorithm, though, may compromise the desired integrity. In this paper we apply a lightweight encryption algorithm named as secure IoT (SIT) to a quantized speech image for secure IoT. It is a 64-bit block cipher and requires 64-bit key to encrypt the data. This quantized speech image is constructed by first quantizing a speech signal and then splitting the quantized signal into frames. Then each of these frames is transposed for obtaining the different columns of this quantized speech image. Simulations result shows the algorithm provides substantial security in just five encryption rounds.

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