

# Crypto-Aided Bayesian Detection of False Data in Short Messages

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Abstract We propose a crypto-aided Bayesian detection framework for detecting false data in short messages with low overhead. The proposed approach employs the Bayesian detection at the physical layer in parallel with a lightweight cryptographic detection, followed by combining the two detection outcomes. We develop the maximum a posteriori probability (MAP) rule for combining the cryptographic and Bayesian detection outcome, which minimizes the average probability of detection error. We derive the probability of false alarm and missed detection and discuss the improvement of detection accuracy provided by the proposed method.

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