UNIVERSITY OF SOUTH FLORIDA

Major Research Area Paper Presentation

Randomized Positioning DSSS for Anti-Jamming Wireless Communications

by

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For the Ph.D. degree in Computer Science & Engineering

Traditional anti-jamming approaches like Frequency Hopping Spread Spectrum (FHSS) and Direct Sequence Spread Spectrum (DSSS) require the sender and the receiver to share a secret key prior to their communication. If this key is compromised by the jammer, the jammer can then generate the frequency hopping patterns or the spreading codes used by the communicators to disrupt the wireless communication. In recent years, DSSS based schemes have been proposed to provide the anti-jamming communication without the shared key. In particular, Randomized Differential DSSS (RD-DSSS) was developed to spread messages based on the indices of public known spreading code sequences. RD-DSSS can effectively mitigate reactive jamming attacks and do not need a shared key, but it appends the indices, which are critical to enable the decoding at the receiver, to the end of the spread messages. As a result, the indices can easily become the jamming target of adversaries. To solve this problem, we propose the Randomized Positioning DSSS (RP-DSSS) scheme that randomly relocates the index codes for each message. Compared to RD-DSSS, the randomization hides the indices from the adversaries and thus achieves the enhanced security.

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ENB 313

THE PUBLIC IS INVITED

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