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NN-based 8FSK demodulator for the covert channel

Tytuł

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Abstract: In this article, a superposition-based covert channel and its demodulator were proposed and examined. As a covert waveform, an 8FSK modulation was selected. The impact of the channel estimation error and resulting imperfect SIC operation (successive interference cancelation) on the covert information demodulation process was considered. Especially for this imperfection, an NN-based demodulator was proposed. The superiority of this solution over the traditional 8FSK correlator-

based receiver was examined for various cases, including the hard- and soft-decision detectors. It was proven that, although NN does not provide BER values equal to zero, even for the perfect SIC, it generally overcomes the traditional correlator-based 8FSK demodulator. Simulation results showed that the NN-based demodulator, in the case of additional covert channel coding, provides error-free demodulation, even for four-times greater channel gain error.

Keywords: wireless communication; covert channel; dirty constellation; steganography; LPD; security; neural network

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