

### 37. NEURAL NETWORKS AS DECISION-MAKING APPARATUS IN ANTIVIRUS SYSTEMS

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One of the goals of antivirus system is to detect and counteract malicious software. Most antivirus systems use a multitude of heuristic, statistical and signature analysis methods for detecting threats. However, to reach a conclusion on safety of a given entity, a decision-making algorithm must be applied to combine aforementioned detection methods. Algorithm recognizes the threat and selects corresponding elimination method. The following neural network architectures were examined in the report: Hamming network, multilayer perceptron, adaptive resonance theory (ART), convolutional networks (CNN), recurrent networks (RNN), capsule neural networks (CapsNet). A hybrid neural network based on ART and CapsNet is proposed. Obtained results show the capability of hybrid neural networks as decision-making apparatus for antivirus systems.