**ABSTRACT**

Intrusion Detection Systems are core part of cyber security measures in all organizations. With increasing amount of data available online in digitized form, this has resulted in an ever growing need for stringent cyber security measures against data breaches and malware attacks. Rising number of attacks coupled with new variants of malware being released on a frequent basis require automated intrusion detection systems. With the state of the art performance of the Deep Learning based Models in the field of computer vision, natural language processing and speech recognition, Deep learning techniques are now being applied to the field of cyber security. The review classifies the Deep Learning models and examines 23 papers in which Deep Learning has been efficiently implemented in Intrusion Detection Systems.