**ABSTRACT:**

**T**he development of the Internet, cyber-attacks are changing rapidly and the cyber security situation is not optimistic. This survey report describes key literature surveys on machine learning (ML) and deep learning (DL) methods for network analysis of intrusion detection and provides a brief tutorial description of each ML / DL method. Papers representing each method were indexed, read, and summarized based on their temporal or thermal correlations. Because data are so important in ML / DL methods, we describe some of the commonly used network datasets used in ML / DL, discuss the challenges of using ML / DL for cyber security and provide suggestions for research directions.