

Applications of machine learning in complex systems

Various methods and techniques of machine learning are presented and critically evaluated in the context of possible applications in complex systems. In particular, a class imbalanced classification learning problem is discussed. This is a well-known big issue in real-world applications as dealing with data exhibiting imbalanced class distribution is both very important and very hard task. Some of existing methods in this area are presented and applied to complex systems, including (a) extreme learning machine (ELM), being a competitive machine learning technique (b) weighted extreme learning machine (WELM) and (c) weighted support vector machine (WSVM). If time permits, also nontrivial applications of random forest (RF), being an ensemble supervised machine learning technique, will be given.