**Abstract**

Pattern recognition stems from the need for automated machine recognition of objects, signals or images, or they need for automated decision-making based on a given set of parameters. In machine learning, pattern recognition is the assignment of a label to a given input value. Pattern recognition is a more general problem that encompasses other types of output as well. It is relatively straight forward for humans to effortlessly identify the genders of these people, but now consider the problem of having a machine making the same decision. The real-world pattern recognition problems are considerably more difficult and such problems span a very wide spectrum of applications, including speech recognition (e.g., automated voice-activated customer service), speaker identification, handwritten character recognition (such as the one used by the postal system to automatically read the addresses on envelopes), topographical remote sensing, identification of a system malfunction based on sensor data or loan/credit card application decision based on an individual’s credit report data, among many others. The nature of this paper makes it impossible to provide more detailed discussion topics, or to provide specific algorithms for all techniques. Therefore, the paper will provide a fundamental background about the pattern recognition system.