What is a pattern? In common sense it is something that occurs repeatedly so some part of a thing or action repeats many times. There can be a pattern in the textile, leather, river flow, trees etc. We can find some pattern in the behavior of animals, like birds periodically migrating to warm countries during winter and back. There are many patterns in human activities. For example, traffic. In the morning there is a traffic peak, second one occurs when people return from work back home. Patterns can be found in many techniques and skills like design patterns in software engineering.

Generally, we can say that patterns can be static or dynamic. I can be something that we can perceive regardless on duration or it is be something that will emerge only after some period of time, or both.

In our book we concentrate on dynamic patterns mainly. That means that the pattern would be acquired by observing the original action through time. Of course, any such pattern written down on a paper is static. Or better, the recorded information about that action is static. But this is more about storing patterns than recognizing them. Patterns and their recognition is just a beginning. There are many things we have to do prior pattern recognition and there are many things which can be done when we have had successfully recognized a pattern. Let's go through most related tasks momentarily.

Firstly, we have to observe an event or thing where we suspect there can be a pattern, so we should have all necessary means of reception to successfully perceive that pattern. That includes any signal or noise filtering. Next, it is necessary to store this observation, our pattern candidate. Working with computers, any digital form can be suitable which will encode acquired data. Then we can hand over this observation to a pattern recognition algorithm which should have been trained before to be able to do such thing. This is the main part of pattern recognition. By this we gain some classes where all observations are categorized. But what to do then? This leads us to a reflection what to do with patterns? Having patterns, we can do many things. It can help us with decisions, control, adaptations, or just description what is happening with our observed system.
The book’s main topic is Pattern Recognition and Classification in Time Series Data. The reader can proceed from introduction to time series, pattern management, pattern recognition and system adaptation based on recognized pattern to more application level articles.

Maybe we still haven’t had answered a question, what is pattern recognition? Shortly, pattern recognition focuses on finding similarities in data, to classify or cluster them into bunch of similar occurrences – patterns. More you can find in our book.

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