

General Introduction

Since the emergence of disciplines as Business Process Management (BPM) and Business Process Reengineering (BPR) at the end of the 80's, organizations have been focusing more and more on their business processes in order to improve the results and reduce costs.

A business process can be defined as a related group of tasks that together create value for an (internal or external) customer and today In many organizations, new processes are emerging and existing processes are changing ("The only constant changes"). Therefore, the alignment of business processes and information systems requires continuous attention. To "maintain the fit" it is important to detect changes over time, deviations of the described or prescribed behavior. Rare deviations will always happen, but should not be regarded as a symptom of a change. However, if the considerable amount of process instances deviate from the prescribed pattern, some action should be undertaken to align the business process and the supporting information system. Similarly, to "create the fit" it may be worthwhile to monitor the actual behavior of the people in the organization before configuring/installing the (new) information system. Both for creating and maintaining the fit (securing alignment) we propose process mining techniques which use event logs to discover the actual process. So what is the process mining? and how we can use it in our department?

In this work Process Mining is applied in the aim of improving the process in Computer Sciences department, and it is divided into four main chapters. The first chapter holds an overview about process mining that illustrates how process mining can bridge the gap between the two big umbrellas of data science and process science. How it improves the process of any organization? and talks about the advantages and challenges of process mining.

Then in the Second chapter we assemble a collection of approaches and disciplines that allow us to understand even more the process mining in addition to the most popular softwares that uses the process mining (Prom).

Afterwards in the Third chapter we will focus more on the main applications of process mining (process discovery, conformance checking, performance analysis), moreover we will talk about the algorithms that is used in process mining and a set of techniques like the alignments technique.

Finally in the fourth chapter we will try to extract the data from the system ,and get the event data that we use to apply the process mining with real data to know the real bottlenecks and help the department to improve its operations