Anomalous Pattern Discovery

Discovery of anomalous behavior in business processes

The APD Tool
Finding out whether a business process is working as intended can be difficult. It is easy to gather data about these processes, but figuring out what kind of recurring problems exist can be time consuming.

This is exactly the purpose of the Anomalous Pattern Discovery (APD) tool. Researchers can run experiments on a specified set of user behavior traces, and a model that specifies correct behavior. The tool checks the traces against the provided model and analyzes the traces for anomalous behavior—behavior that does not conform with the provided model. An example of a loan application process with traces is displayed in Figure 1.

Figure 1: A loan application process with example traces. Circles denote waiting states, rectangles denote transitions between states.

Project & Experiment Management
Users can create a new project by uploading an event log and a process model. They can then run any number of experiments on these project files, configured with different parameters (Figure 2).

Figure 2: Structure of projects and experiments

User Interface
The goal was to make a more user-friendly interface than the original APD tool interface, without sacrificing any of the functionality it offered. This was done by creating a new design for the tool adhering to the Material Design standard by Google. The displaying of results was also overhauled. Both phases of a single experiment can be displayed on a single page (Figure 3).

Figure 3: The results page

The Delta Extension
The goal of the Delta team was to extend the APD tool with several new features. Delta will extend the tool with a proper user management system that deals with user registration and user authentication. Furthermore, the extension will improve project and experiment management to the tool. The users will be able to interact with these new features in a redesigned user interface.

User Registration
Delta added a user management system, allowing people to register for an account on the tool. The accounts are linked to a permission system for accessing project files. An administrator account is also available to maintain the tool and manage other user accounts.