Syllabus: Business Process Management and Mining

Course Description

Business processes are pervasive in our lives: in banks, telecommunication centers, web-services, and even in healthcare. Processes in organizations are there to make sure that the business goals are achieved in an efficient way with the highest quality of products and/or services. Business Process Management (BPM) is a research field that focuses on improving company’s performance by managing and optimizing its processes. The BPM lifecycle includes (Re)Design, Modeling, Executing, Monitoring and Optimizing business processes. We shall cover the components of the lifecycle with emphasis on modeling, analysis and optimization of processes in a data-driven fashion. The course combines novel approaches in Data Science, Information Systems and Operations Management.

The first part of the course comprises basic concepts of Business Process Management such as modeling languages, model discovery, qualitative and quantitative analysis of processes models. In the second part of the course, the focus shifts to a Data Science methodology for BPM, namely Process Mining. The students will learn the three basic steps of Process Mining: discovery of models from data, conformance analysis of the resulting models with data, and performance analytics. The emphasis of the Process Mining part will be on performance analytics. The course will cover state-of-the-art literature, and as part of the final grade will require the students to present seminars on a set of selected topics.

Instructor
Arik Senderovich, sariks@mie.utoronto.ca
Office: TBD.
Office hours: TBD.

Meetings
Lecture: Friday 9:00-12:00

Textbooks
- Fundamentals of Business Process Management (Dumas, La Rosa, Mendling, Reijers 2012).

Online Resources
Course website.
Course Topics

- Introduction to Business Process Management
- Process Modeling: Languages (BPMN, Petri nets), translation between languages, process elicitation
- Process Mining: Automated process discovery, quality dimensions in process discovery, conformance checking, performance analysis
- Advanced topics: queue mining, process matching, model simplification, hybrid mining

Course Expectations & Grading

Option 1 (Main Stream): HW (40%), Presentation in Class and Paper Summary (40%), Final Project (20%).
Option 2: For graduate/excellent students, it is possible to conduct a research project instead of the programming project (in coordination with Arik). Then, it is HW (40%) and project (60%).