

Artificial Intelligence Techniques for Business Process Management

A course for PhD students, *Alma Mater Studiorum* Università di Bologna

Novembre/December 2018 - DISI, viale Risorgimento 2, Bologna

Instructor: Federico Chesani (DISI, Università di Bologna)

About the course

The attendees will be introduced to the Business Process Management research field, with a very broad introduction to the issues and the problems currently faced within the community. A brief introduction to very common standards like, for example, XES, BPMN, and Declare will be provided, together with their intended semantics (when available). Then, the course will focus on several AI techniques that have recently emerged as possible alternatives for solving classical BPM problems. Finally, a quick introduction will be presented about Rule-based Decision Support Systems, and how such classical methods have been recently exploited to tackle the problem of the run-time monitoring of BPM processes.

Syllabus

- BPM Foundations: lifecycle, classification of processes, workflow management
- BP Modelling: Activities, Processes, Cases/Instances, Data, Organization, and Operation
- BP Modelling: Orchestration-like modelling, YAWL, BPMN
- BP Modelling: Choreography-like modelling, Declare, BPMN
- BP Properties: data dependencies, soundness
- Modeling decisions and BP
- Mining BP Models
- Monitoring BP Processes
- Event Calculus, Abduction, Planning for monitoring/verifying/generating complete/incomplete processes

Learning and assessment modalities

The course will be organized in five slots of two hours each, divided into class lectures and practical activities (exercises, software experiments and data analysis). It will be taught either in Italian or English at the preference of the attendees. The final assessment requires the students to prepare a short paper on a BPM topic, agreed with the instructor, and possibly revised according to the instructor's remarks; the final acceptance of the paper means that the exam is passed.

Teaching materials

Lecture notes and slides will be provided by the instructor, along with papers and a list of bibliographical references and additional material. All the course material is in English.

Lecture Schedule

Lectures will be held on:

- 16/11, 9.00-11.00, Aula 2.2
- 30/11, 15.00-17.00, Aula 5.1
- 7/12, 9.00-11.00, Aula 2.2
- 14/12, 15.00-17.00, Aula 4.2
- 18/12, 15.00-17.00, Aula 5.5