

IE594- Process Mining in Healthcare Systems Spring 2015

Course General Information:

Instructor: Professor Darabi

Office: ERF 2055 (312 996 6593)

Email: hdarabi@uic.edu

Office Hours: By appointment only

Text: (1) Process Mining, Wil M. P. van der Alast, 2011, Springer-Verlag
(2) Notes given in class

Classes: Lectures TR 2:00PM-3:15PM (SEL 3290)

Grade Policy: Midterm (take-home):	25%
Final project:	25%
Term Paper (Oral and Written):	25%
Homework (Mini projects)	25%

TA: Ashkan Sharabiani (ashara2@uic.edu)
Office: SEL 4209
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Office Hours: TBD

What Is Covered in This Course?

1- Introduction

- Workflow basic definitions
- Process mining
- Healthcare workflow systems

2- Process Modeling and Analysis

- Transition Systems and finite automata
- Petri Nets
- Verification and analysis
- Performance analysis

3- Data Mining

- Data mining method classification
- Decision Trees
- K-Means Clustering
- Association Rule Learning
- Sequence and Episode Mining
- Quality of Resulting Models

4- Process Discovery

- Getting the data (EHR systems, observation, interview, surveys, event logs)
- Alpha Algorithm
- Heuristic Mining
- Other process mining algorithms

5- Process Mining Applications

- Conformance checking
- Organizational mining and social network analysis
- Analyzing Lasagna and Spaghetti processes

What else you need to know?

- All students taking this course must complete HIPAA and IRB certificates within the first three weeks of this course. Exams, homework, and projects of the students who do not successfully obtain these certificates within the specified timeframe will not be graded.
- Students are supposed to finish the assignments on time. Late submission of projects, exams, term papers, and homework is equivalent to a zero grade for the late submitted assignment.
- Students must have basic knowledge of probability and statistics. They must know popular probability distributions, test of hypotheses, estimation, random sampling, sampling distributions, and other basic statistical concepts.
- Students must be able to use MS Excel. Several projects and homework data in this course are given to the students in an Excel sheet. The students are supposed to know how to handle large-size Excel sheets.
- Students need to learn the data mining software (R). There will be tutorials for R in this course.
- The course materials learned in this course are applicable to different systems such as education and business systems, but the main focus of the course will be on healthcare problems.