Syllabus and course schedule for LS 287
Machine Learning: Algorithms, tools and systems
Fall 2017

LS 287: Machine Learning: Algorithms, tools and systems

Lecture and discussion: TuThu 11:00 - 1:00 pm
Venue: Room number 101, 3rd Floor, Main Administration Building

Dr. Indranil Dutta

Office: 18 EMMRC, 1st floor
Email: indranil.dutta.id@gmail.com
Office Hours: By appointment;
please e-mail me a day and time that is convenient for you and I will get back to you.

Reading list

- Géron, Aurélien. 2017. *Hands-On Machine Learning with Scikit-Learn and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems*. O'Reilly Media.
- Richert, Willi and Luis Pedro Coelho. 2013. *Building Machine Learning Systems with Python*. Packt Publishing.

Prequisites: At least an A grade in **LS 175: Quantitative Methods in Linguistics** and familiarity with *Python* and *R* programming environments or consent of instructor.

Course description: The aim of this course is to learn the basics of machine learning algorithms, tools and systems. To that end, students will be familiarized with basic classification, clustering and evaluation tools using Python. Machine learning as a field has grown in the last decade or so in order to make headways into analyzing and extracting patterns in large datasets. The primary goal of this course is to learn statistical and probabilistic techniques relevant towards dealing with large labelled as well as unannotated natural language data

towards building systems that are able to draw on patterns that are transparent to basic analytical techniques.

The topics that we will cover will include the following:

- Nearest-neighbor (NN) classifiers
- Naïve Bayes classifiers
- Clustering techniques
- Topic modeling
- Pattern recognition
- Decision trees and rules
- Support Vector Machines
- Artificial and Deep Neural Networks

Grading:

Class presentations (3)	20%
Mid-semester examination	20%
Final presentation and project	60%

Absences: It is also an imperative that you attend all classes and engage in discussions. If you are unable to turn in an assignment you WILL NOT be able to turn the same late. I would expect a minimum two weeks notice for any scheduled absences. Any absence due to illness or family emergency will be considered if and only if you provide written evidence and that you notify me *as soon as possible*.