



## Introduction to Statistical Machine Learning

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### Description

This course provides a broad introduction to the methods and practice of statistical machine learning, which is concerned with the development of algorithms and techniques that learn from observed data by constructing models that can be used for making predictions and decisions. Topics covered include overfitting, Naive bayes, Boosting, Tree Decision, K-means clustering and neural networks

### Learning Objectives and Outcomes

- Ability to select and implement machine learning techniques
- Ability to integrate machine learning libraries and mathematical and statistical tools
- Understand how to evaluate models generated from data

### Course Schedule and Contents

Session#1 3h	<ul style="list-style-type: none"><li>• Introduction to machine learning (overfitting, cross-validation, etc.)</li><li>• Lab1: preprocessing of data using pandas and numpy</li><li>• Decision Tree algorithm</li><li>• Lab2: solving problem using decision tree</li></ul>
Session#2 3h	<ul style="list-style-type: none"><li>• Boosting algorithm</li><li>• Lab3: solving problem using Adaboost</li></ul>
Session#3 3h	<ul style="list-style-type: none"><li>• Naive bayes and K-means algorithms</li><li>• Lab4: solving problem using Naive bayes</li></ul>
Session#4 3h	<ul style="list-style-type: none"><li>• Introduction of neural networks algorithm</li><li>• Final exam</li></ul>

### Grading

Final exam	50%
Project:	50%



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### Policies

- I expect you to turn-in your reports on time to receive proper credit/grade.
- Any work submitted must be your own.
- I expect everyone to contribute equally to group assignments
- Attendance in every class is expected. Class participation and discussion are strongly encouraged.
- Late work will not be accepted unless prior arrangements have been made directly with me.
- Cases will be decided on an individual basis.

Good Luck!