Machine Learning

DD2431

Örjan Ekeberg & Atsuto Maki

Autumn, 2013

Teachers
What is Machine Learning?
About the Course

1. Teachers
2. What is Machine Learning?
   - Applications
   - Types of Learning
3. About the Course
   - Registration
   - Examination
   - Textbook
   - Course Contents
   - Labs

Örjan Ekeberg & Atsuto Maki Machine Learning

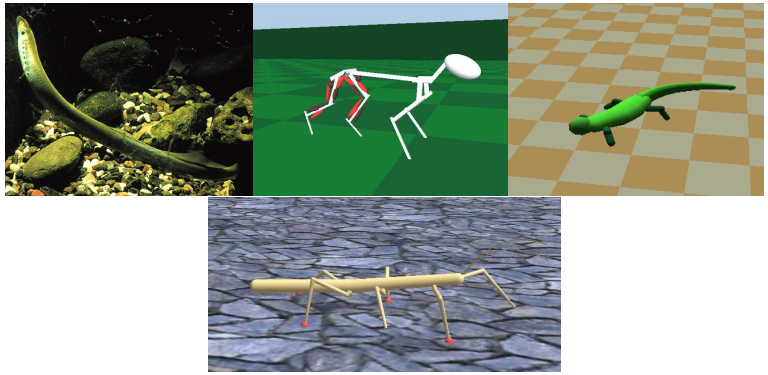
Teachers

- **Örjan Ekeberg**
  Dept. Computational Biology
  School of Computer Science and Communication
- **Atsuto Maki**
  Dept. Computer Vision and Active Perception
  School of Computer Science and Communication
- Course Assistant: **Pierre Berthet**

Who am I?

My research

Simulation of the neural control of movements.



Applications

Sample Applications

- Speech recognition
- Autonomous driving
- Games: Backgammon
- Autonomous robots
- Spam-filter for e-mail

Role of Learning

Data mining Transform data into knowledge

Vaguely specified tasks Robotics, speech, vision, games

Adaptive programs User adaptable programs/devices

Types of Learning

- Supervised Learning
  - Regression
  - Classification
- Unsupervised Learning
  - Data Modeling
  - Compression
- Reinforcement Learning
  - Behavior Selection
  - Planning
- Evolutionary Learning
  - General Purpose Optimization

Course Registration

Register via "My Pages" ("Mina Sidor")

Course Information

1. KTH Social (Schedule, Lab instructions, etc.)
   https://www.kth.se/social/course/DD2431
2. Lab results: https://rapp.nada.kth.se

Examination

Obligatory parts of the course
- Written exam
- Four labs

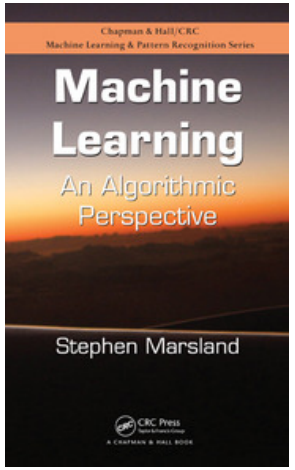
Bonus Points
- Each lab finished (successfully examined) before its deadline gives one bonus point.
- Bonus points are added to the exam result.
- Bonus can not save you from F (failed).
- Bonus points can not be saved to next year.

Textbook

Stephen Marsland

Machine Learning, an Algorithmic Perspective

CRC Press, April 2009



Course Contents

- Concept Learning
- Decision Trees
- Artificial Neural Networks
- Support Vector Machines
- Evolutionary Algorithms
- Boosting
- Probabilistic Methods
- Reinforcement Learning
- Graphical Models
- Learning Theory

Labs

1. Decision Trees
2. Support Vector Machines
3. Bayes Classifier & Boosting
4. Reinforcement Learning

Note: Labs are not shown in the schedule.
Online booking of lab examination time-slots.
Examination:

- It is your task to convince the examiner that you have done the assignment and understood the results.
- 10 minutes
- No computer