

# 01 - Course overview

March 6, 2017

## 1 Foundations of Machine Learning

### 1.1 Course overview

#### 1.1.1 Learning objectives:

- Build predictive models from training data
- Correctly evaluate predictive models
- Analyze and compare the performance of different models
- Reason about the mathematical foundations of data mining techniques
- Recognize when a predictive model is under/overfitting
- Understand and exploit the bias-variance tradeoff
- Combine the above with dimension-reduction techniques
- Visualize and explore data using embeddings and clustering

#### 1.1.2 Lecturers:

- Joaquin Vanschoren (j.vanschoren@tue.nl) MF 7.104a
- Vlado Menkovski (v.menkovski@tue.nl) MF 7.097b
- Anne Driemel (a.driemel@tue.nl) MF 7.073

#### 1.1.3 Contact hours:

- Mondays, 10:45 - 12:30: Plenary Lectures (AUD 3)
- Thursdays, 13:45 - 15:30: Tutorials and Feedback (AUD 3)
- Thursdays, 15:45 - 17:30: Plenary Lectures (Flux 1.03)

#### 1.1.4 Course materials:

- Lecture materials (Notebooks+PDFs) on GitHub
  - <https://github.com/joaquinvanschoren/ML-course>
  - The README contains pointers to relevant books
- See Canvas for:
  - Syllabus
  - Announcements, discussions
  - Assignments, grades

### 1.1.5 Evaluation:

- No exam, only assignments (4 problem sets)
- Preliminary(!) overview:
  - 1: Linear Models, Model selection, Ensembles
    - \* Released Feb 9 , Deadline Feb 23
  - 2: Kernel method and Bayesian Inference
    - \* Released Feb 23, Deadline Mar 16
  - 3: Deep learning
    - \* Released Mar 16, Deadline Mar 30
  - 4: Dimensionality reduction, Embeddings
    - \* Released Mar 30, Deadline Apr 13
- Work in teams of 2 students
  - Free choice, rotated after every assignment
- Passing grade: 6/10 over all assignments