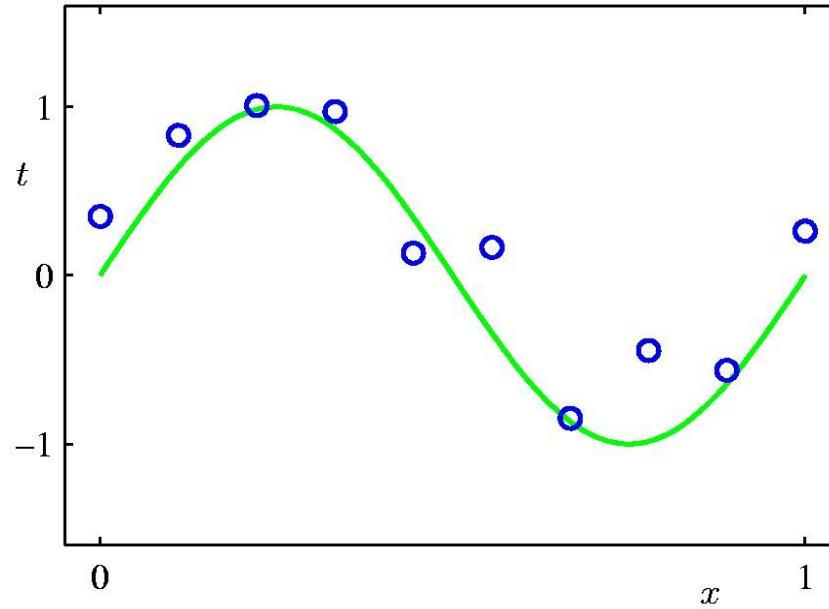
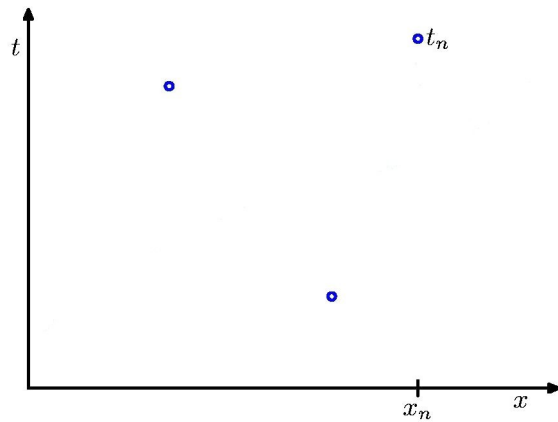
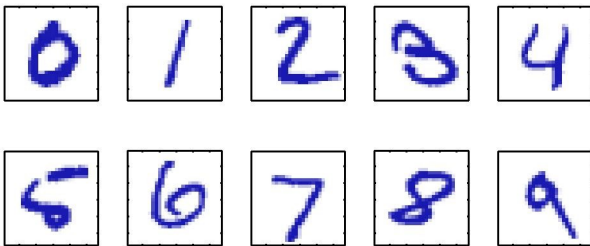


Machine Learning



Machine Learning: what is it?

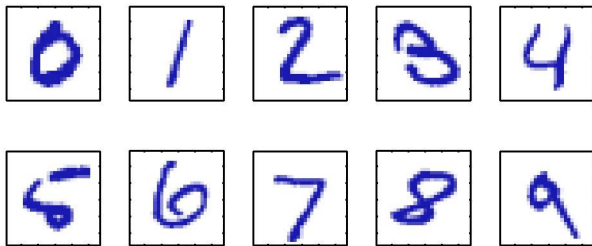
We have data



Machine Learning: what is it?

We want

We have data

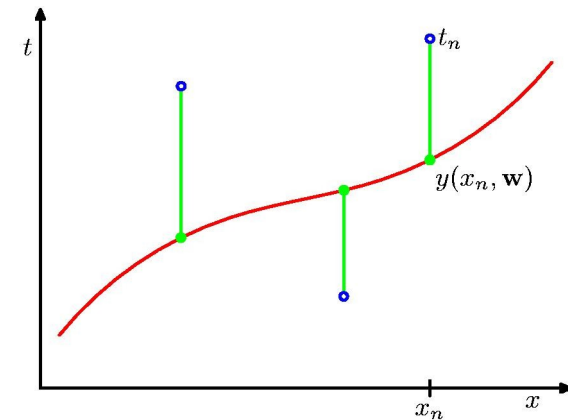
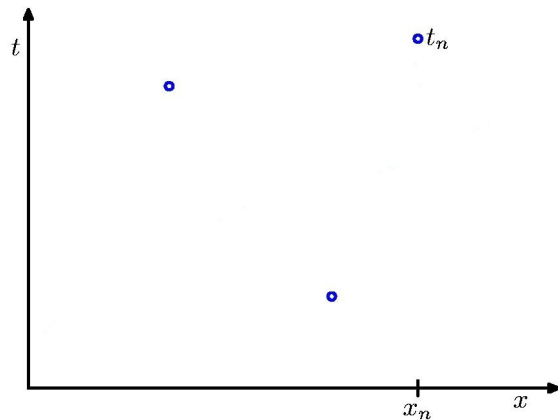


...a model

...a prediction

0 1 2 3 4
5 6 7 8 9

Classification



Regression

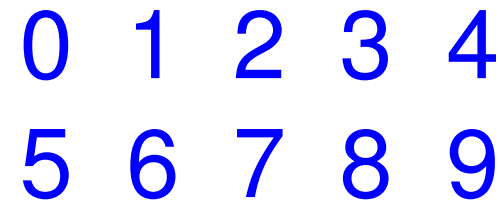
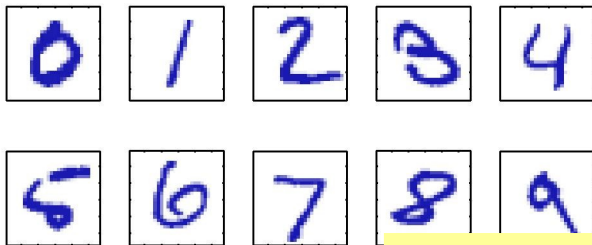
Machine Learning: what is it?

We want

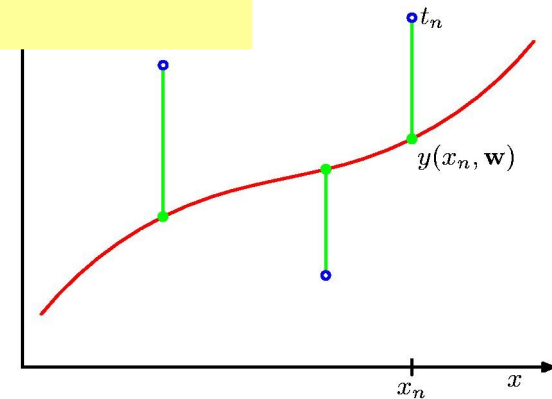
We have data

...a model

...a prediction



In machine learning we use **generic models** that we train from the data.



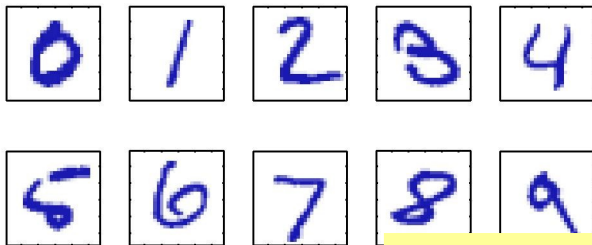
Machine Learning: what is it?

We want

We have data

...a model

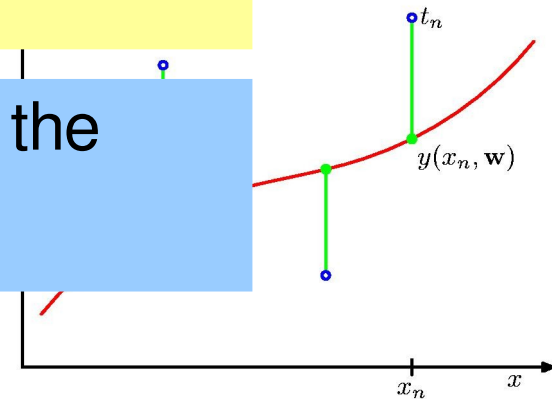
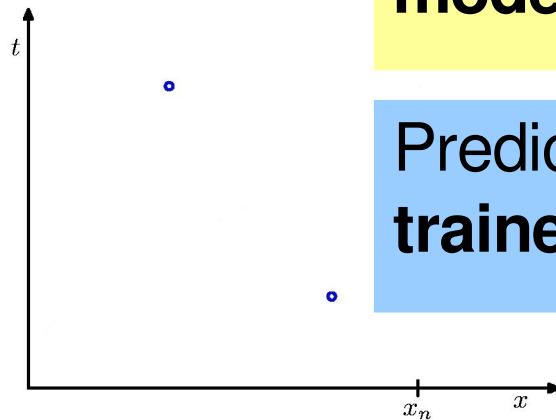
...a prediction



0 1 2 3 4
5 6 7 8 9

In machine learning we use **generic models** that we train from the data.

Prediction is achieved using the **trained models**.



Machine Learning

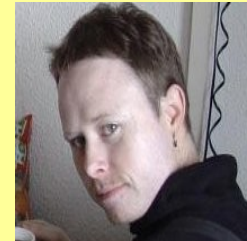
Lecturer

Thomas “Mad Dog” Mailund

Email: mailund@birc.au.dk

Office: 1090.224B

Phone: 8942 3149



Christian Nørgaard Storm Pedersen

Email: cstorm@daimi.au.dk

Office: 1090.112

Phone: 8942 3121



Homepage

http://www.daimi.au.dk/~cstorm/courses/ML_f07/

Lectures

When and where

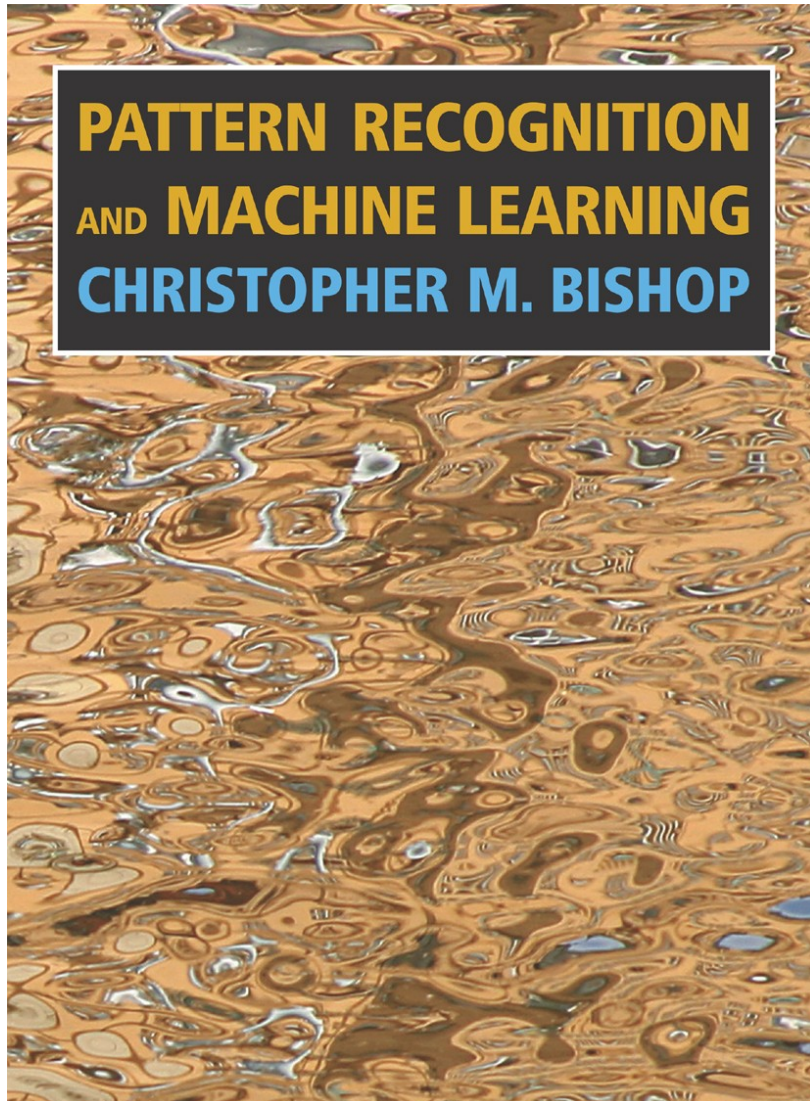
Tuesdays: 09:15-11:00, Shannon 157

Fridays: 13:15-14:00, Shannon 157

Weekly schedule

http://www.daimi.au.dk/~cstorm/courses/ML_f07/schedule.html

Literature



Christopher M. Bishop
**Pattern Recognition and
Machine Learning**

Spring 2006

Available at the GAD
bookstore. Additional material
will be available on the course
www pages

Mandatory Projects

There will be two mandatory projects

Neural Networks

May 1st to May 25th

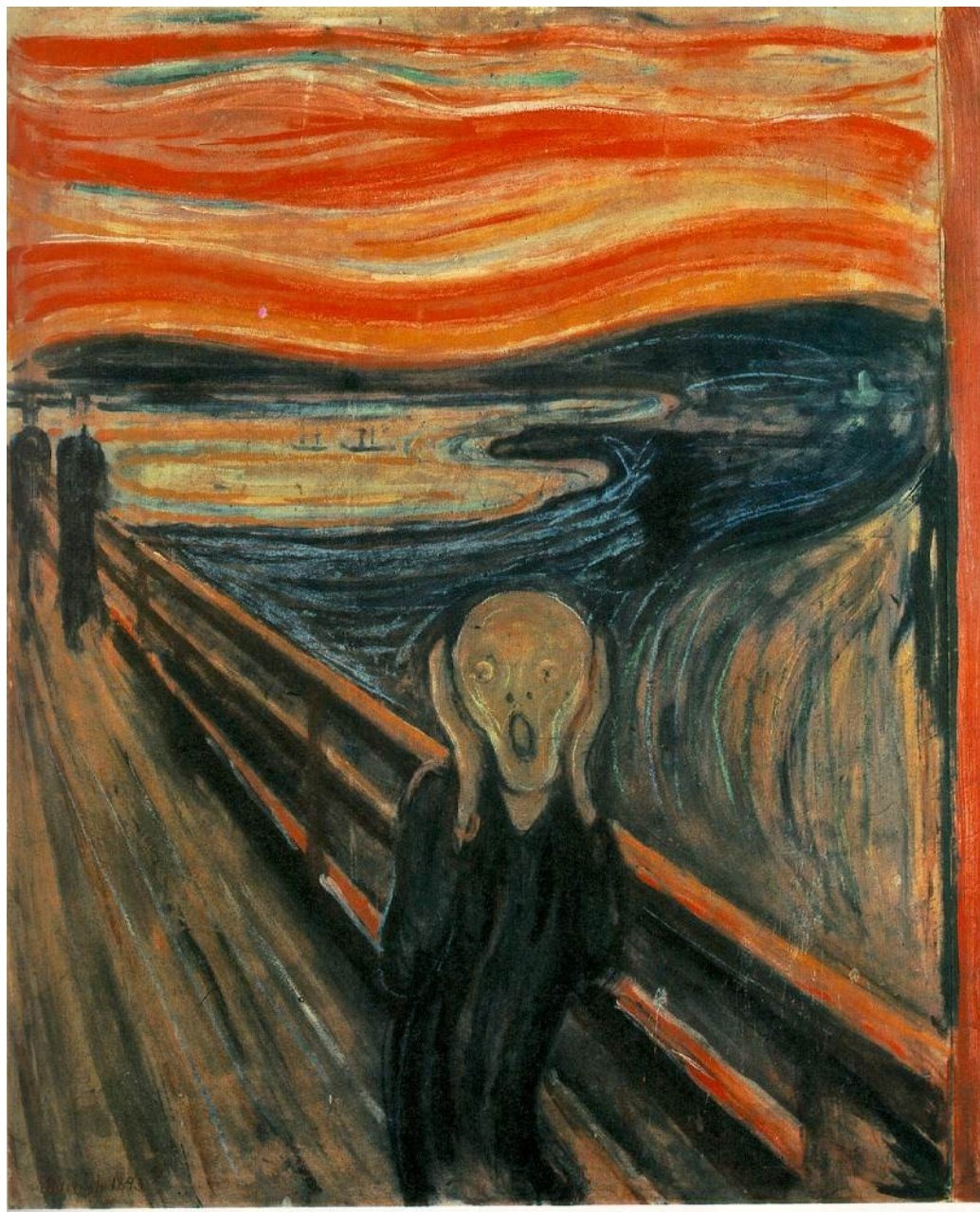
Hidden Markov Models

May 15th to “some time in June”

Work in groups of 2-3 students

...implementation, training, experimenting...

Exam



Exam

Individual oral exam (20 min; no preparation)

4-6 questions based on theory from lectures

Presentation of mandatory projects and related theory

More info later...

Schedule

- Week 1** Crash course in probability theory and statistics (chapters 1 and 2)
- Week 2** Linear regression (chapter 3)
- Week 3** Linear classification (chapter 4)
Neural networks (chapter 5)
- Week 4** Neural networks *cont.*
Presentation of first mandatory project
- Week 5** Graphical models and HMMs (chapters 8 and 13)
- Week 6** Graphical models and HMMs *cont.*
Presentation of second mandatory project
- Week 7** Bits'n'pieces
Hand in of first project
Evaluation of course and information about exam

Schedule

Week 1 Crash course in probability theory and statistics
(chapters 1 and 2)

Week 2 Linear regression (chapter 3)

Week 3 Linear classification (chapter 4)
Neural networks (chapter 5)

Week 4 Neural networks *cont.*
Presentation of first mandatory project

Week 5 Graphical models and HMMs (chapters 8 and 13)

Week 6 Graphical models and HMMs *cont.*
Presentation of second mandatory project

Week 7 Bits'n'pieces
Hand in of first project
Evaluation of course and information about exam