

TDDE19 Advanced Project Course - AI and Machine Learning  
Introduction  
Cyrille Berger

## Course overview

## Lecture content

- Course overview
- Projects

## Project

- Group 4-5 persons
- Common theme, different tasks
- 160h
- Weekly meeting (Monday 13:15-17:00)
- *Customers*
- Emphasis on *integration* and *operational constraints*

# Deliverable

- Planning report
- Individual weekly activity report / Meeting notes (in gitlab wiki)
- Half-time report
- Code (on gitlab)
- API and installation documentation
- Group report presenting techniques and results

# Timeline

- W35: Project selection
- W36: Project discussion
- W36-37: Research
- W38-41: Sprint 1: Initial implementation
- W45: Monday 6th of November 13:15-17:00 mid-term presentation and evaluation
- W44-46: Sprint 2: Refinement, first results
- W47-50: Sprint 3: Results and evaluation
- W51: Monday 18th of December 13:15-17:00: Presentation
- Sunday 7th of January: Deadline for reports
- Course grades by mid-January

# Agile / Scrum

- Break the work in *goals* completed during *sprints*
- Roles:
  - *Product owner* liaison with the customers
  - *Scrum master*
  - *Developers*

# Scrum workflow

- *sprint*
  - At the beginning: *sprint planning event* define the goals for the sprint
  - During: *"daily" meeting* talk about progress toward the goals
  - At the end:
    - *Sprint review* with me, show progress
    - *sprint retrospective* evaluate what worked well and not, and draw lessons for next sprint

# Project selection

- After this presentation, you should form your groups
  - Add them to webreg
- **Email me before Wednesday noon** with:
  - Your group number
  - A ranked list of **all** projects
  - You can specify **one** area of interest among:
    - Machine Learning
    - Natural Language Processing
    - Robotic
    - Computer Vision

# Course evaluation and improvements

- Students were generally satisfied.
  - But always room for improvement
- It would be better if you could be guaranteed to get a project within the area you've specialized in during the master's program, in order to use what you've learned
  - This year you will form groups today and decide together what you are interested in.
- Problem with IT / Olympen
  - This year more tight selection
  - Will see if I can book Olympen time for the course
- Not structured enough / Lack organization / Teacher does not have knowledge of a specific method
  - We follow scrum this year (or at least attempt)
  - You are expected to be independent, my main role is *examination* (and also *customer*)
- I like feedback!

# Dividing work load

- Some projects can involve preprocessing/visualisation, make sure to spread that load among the student group
- subgroup of maximum 2-3

# Projects

# Projects

- Natural Language to Query
- Automatic Quest Generation
- Chatbot as teaching assistant
- Continual learning onboard of a robot
- Bee traffic monitoring

# Natural Language to Query

```
NL: How much is Mark Zuckerberg's salary?  
SQL: SELECT   
FROM given table  
WHERE 
```

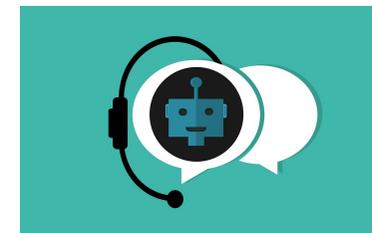
From a natural sentence, query the state of the world.

# Automatic Quest Generation



Automatic generation of quests depending on player input and state of the worlds.

# Chatbot as teaching assistant



A chatbot that can be used to help students, providing **accurate** information.

## Continual learning onboard of a robot



Help a robot learn new object during the course of its operation.

## Bee traffic monitoring



Count the number of bees entering and exiting a beehive.

## Guideline for selecting a project

- If you are interested in Machine Learning:
  - Pretty much all the projects have Machine Learning possibilities
- If you are not interested in Machine Learning:
  - Difficult but there are opportunities for Knowledge Processing in *Automatic Quest Generation Chatbot as teaching assistant*
- If you are interested in NLP
  - *Natural Language to Query Automatic Quest Generation Chatbot as teaching assistant*
- If you are interested in Robotic
  - *Continual learning onboard of a robot*
- If you are interested in Computer Vision
  - *Continual learning onboard of a robot, Bee traffic monitoring*

## Remember

- Deadline for project preferences is Wednesday, September, 30st at **noon.**
- After this presentation, you should form your groups
  - Add them to webreg