Search, Navigate, and Actuate

Overview
Leo Dorst

Master & PhD in Applied Physics
Nick de Wolf

Junior Lecturer in Artificial Intelligence

e.g. 3D room reconstruction and object detection
Tutor in Bachelor Artificial Intelligence

e.g. Two Static Program Analyses for EDiFy
Thomas Groot

Assistant in Bachelor Artificial Intelligence

e.g. Natural Conversation with the Pepper robot
Arnoud Visser

PhD in Computer Science, Master in Physics, Minor in BioChemistry
Objectives

• Integrate the knowledge and skills acquired in the 1\textsuperscript{st} year
• Initiate skills to plan, manage, execute and report a development project
• Introduce the knowledge needed for robotics
Program

1\textsuperscript{st} Week: Search
Find the next move for a chess playing robot

2\textsuperscript{nd} Week: Actuate
Translate the piece movements to arm movements

3\textsuperscript{rd} Week: Plan
Make your own research proposal

4\textsuperscript{th} Week: Act
Do something nobody has done before
Robots, Sensor & Simulators

Full lists: see Network Institute
Schedule

2 hours: Lecture
   Knowledge needed for the task

3 hours: Practicum with assistance
   (i.e. Thomas, Boas, Pieter, Simon, Tim Douwe & Nick).

3 hours: Practicum without assistance
   Work together on the assignment
Grade

1th Week: Programming skills
TAs will grade your implementation of the chess endgame

2nd Week: Mathematical skills
Leo Dorst will grade your homework
TAs will grade your implementation of the chess playing robot (in simulation)

3rd Week: Development skills
TAs will help with the content of the proposal
Tutors will give feedback on the proposal

4th Week: Development skills
TAs will help with the execution of the proposal
Arnoud Visser will grade your demonstration
Classical problem in AI

The chess-playing Turk defeated Napoleon in 1769
Many famous researchers contributed

- Norbert Wiener (1948) introduced a design for a chess program including minimax
- Alan Turing (1951) wrote first full chess program
- John McCarthy (1956) conceived alpha-beta search
AI has ‘solved’ the problem

Deep Blue wins with 3½-2½ in 1997
Computer used to analyze human chess champions

Matej Guid and Ivan Bratko

Computer analysis of world chess champions
Now it is your turn:

Have fun!