Advanced Artificial Intelligence

“Advanced” Artificial Intelligence

Introduction

Your teachers

Joe Steinhauer, Ph.D.

(Examiner)

Senior lecturer in Computer Science

Office: Portalen A, 5th floor

Email:

joe.steinhauer@his.se

Member of: Skövde Artificial Intelligence Lab (SAIL)

Nikolas Huhnstock

(Course responsible)

Ph.D. student

Office: Portalen A, 5th floor

Email:

Nikolas.huhnstock@his.se

Member of: Skövde Artificial Intelligence Lab (SAIL)

Niclas Ståhl

(Guest lecturer)

Ph.D. student

Office: Portalen A, 5th floor

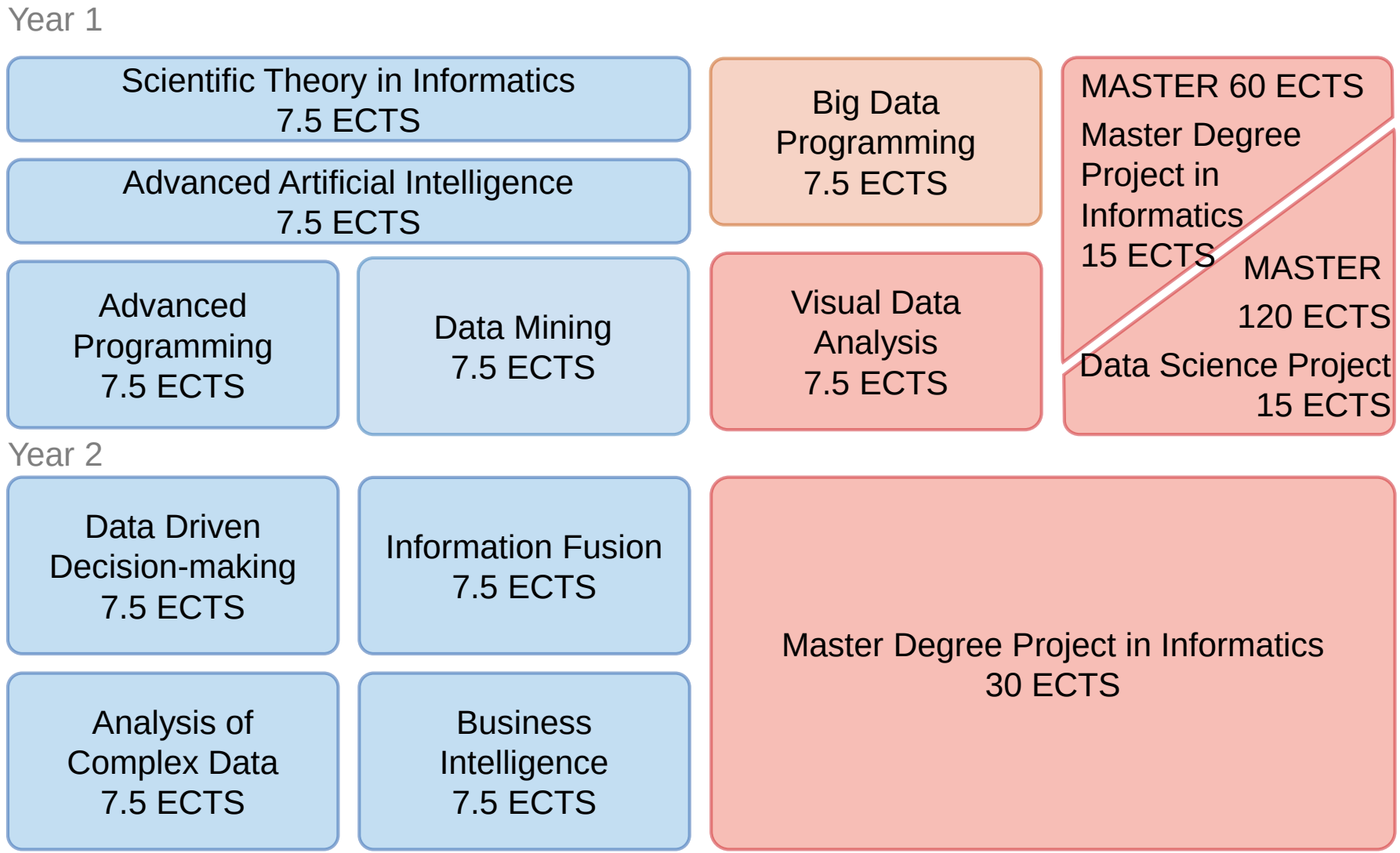
Email:

Niclas.stahl@his.se

Member of: Skövde Artificial Intelligence Lab (SAIL)

Data Science

1 or 2 year master program at the university of Skövde



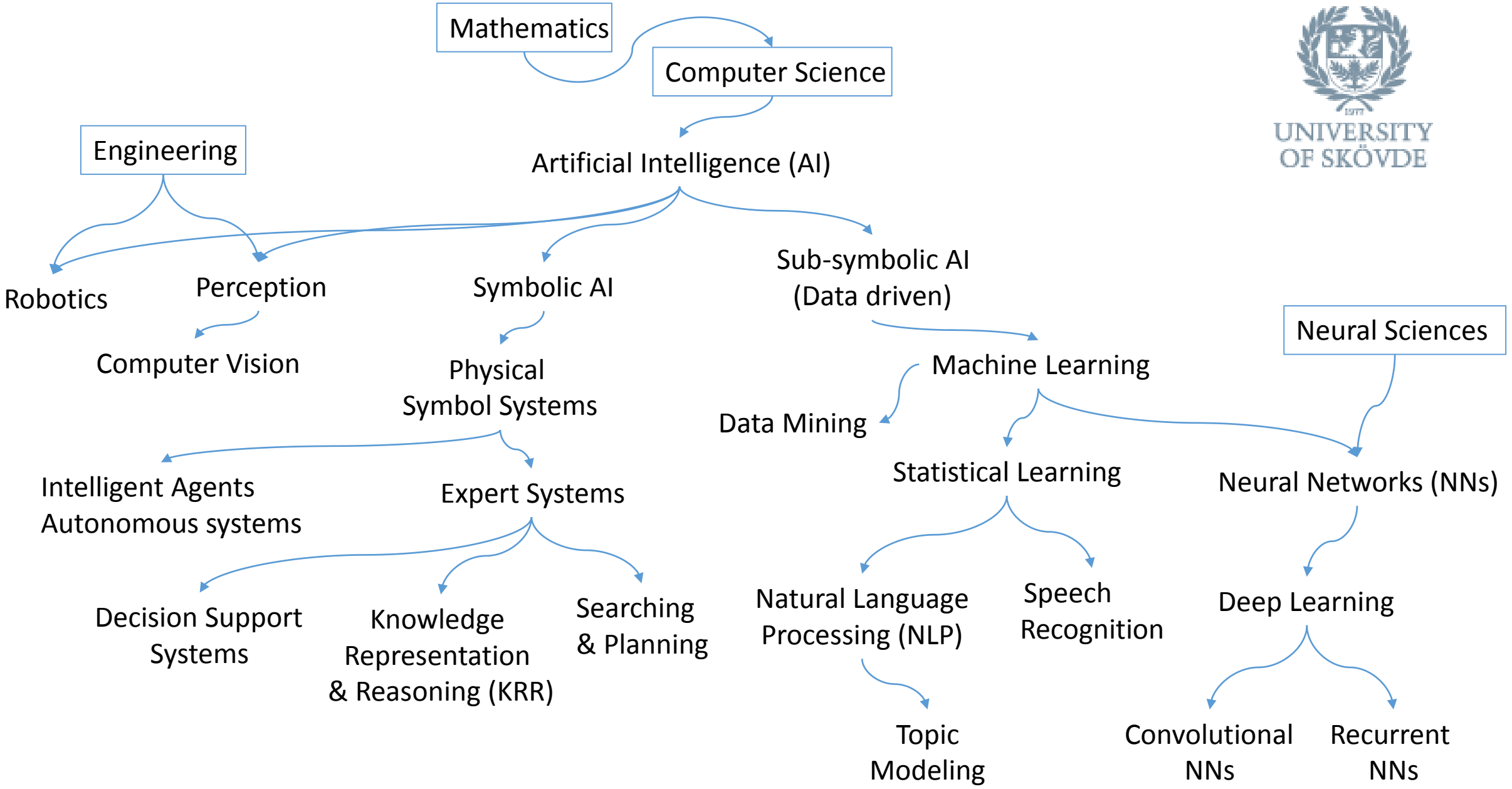
Forms of Teaching

- The teaching comprises
  - Lectures
  - Seminars
  - Presentations
  - Practical exercises
  - Written report
  - Written exam

- The teaching is conducted in English.

What is AI ?

A tiny bit of history and where we are now


Mathematics
Computer Science
Engineering
Artificial Intelligence (AI)
Robotics
Perception
Symbolic AI
Sub-symbolic AI
(Data driven)
Computer Vision
Physical
Symbol Systems
Neural Sciences
Machine Learning
Data Mining
Intelligent Agents
Autonomous systems
Expert Systems
Statistical Learning
Neural Networks (NNs)
Decision Support
Systems
Knowledge
Representation
& Reasoning (KRR)
Searching
& Planning
Natural Language
Processing (NLP)
Speech
Recognition
Deep Learning
Topic
Modeling
Convolutional
NNs
Recurrent
NNs

Seminar assignment (1 credit)

Ethical question

- In groups of 3 or 4 students
- You prepare a 10 minutes presentation where you raise an ethical question within AI and discuss the question.
- You write a short report where you raise and discuss the question. (5 pages).

Group assignment (2 credits)

Practical assignment

Teacher: Niko Huhnstock

More info will be provided by Niko.

Examination

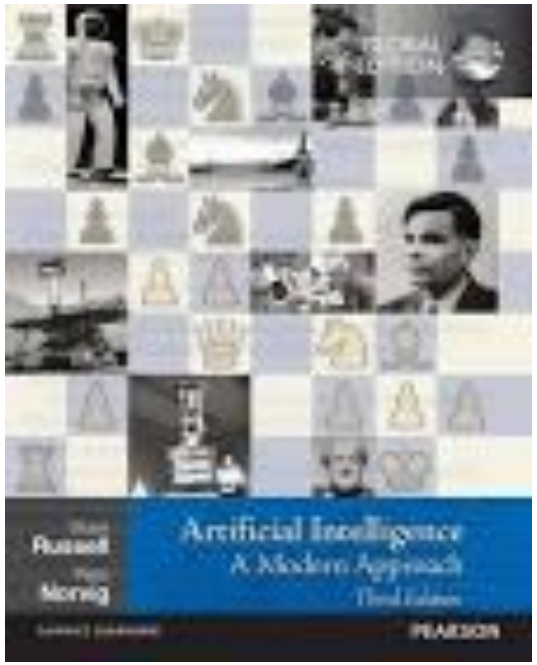
The course is graded
Excellent (A), Very Good (B), Good (C), Satisfactory (D), Sufficient (E), Fail (F).

- Supervised written examination[1] 4.5 credits A/B/C/D/E/F
- Seminar assignment 1 credit Pass/Fail
  - Presentation
  - Written report
- Group assignment 2 credits Pass/Fail

[1] Determines the final grade of the course, which is issued only when all course units have been passed.

Literature

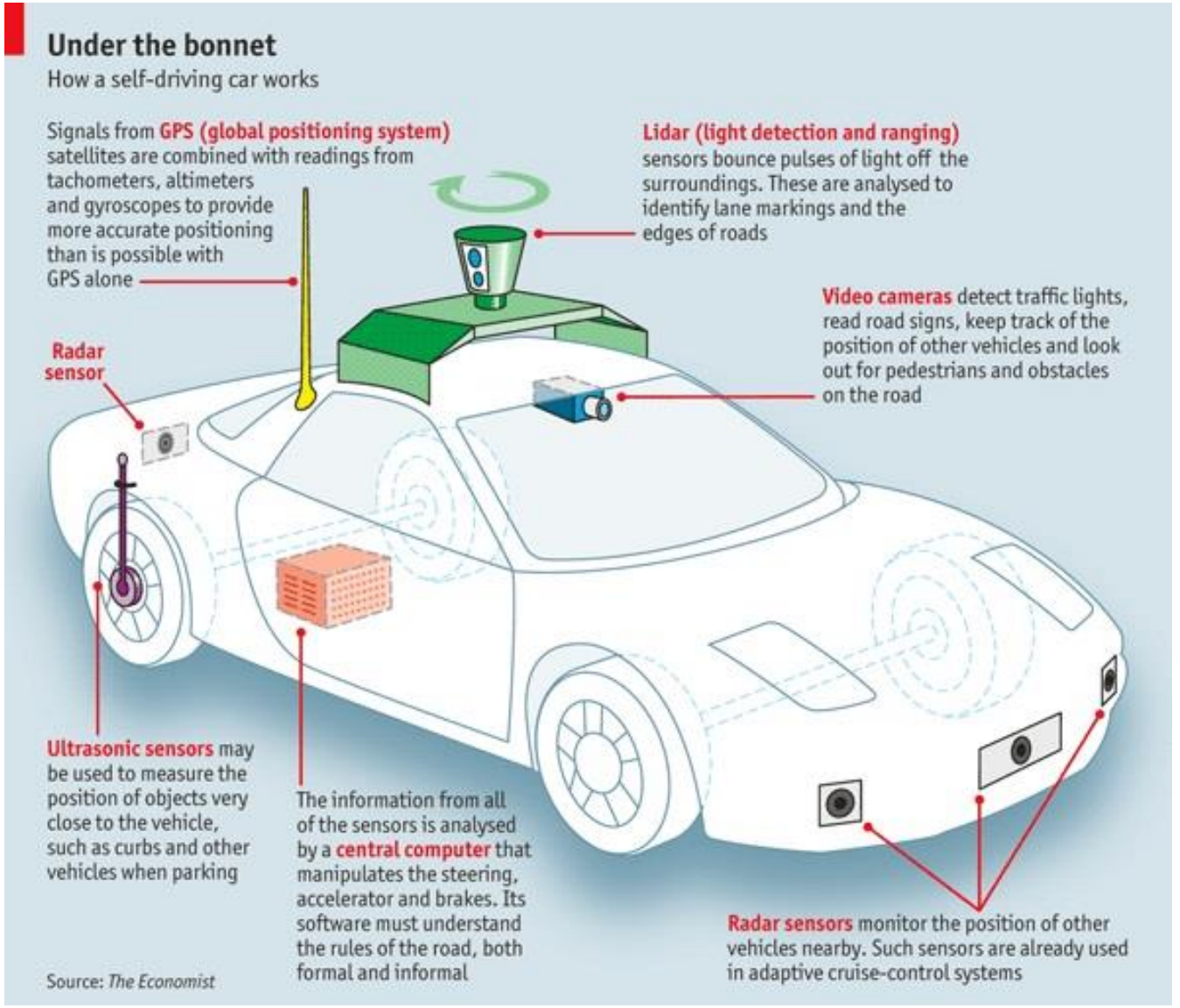
Artificial Intelligence
A modern approach
Third Edition
Stuart Russel & Peter Norvig
2010 by Pearson Education Inc.
ISBN-13 978-0-13-207148-2
IISBN-10 0-13-207148-7
Selected chapters



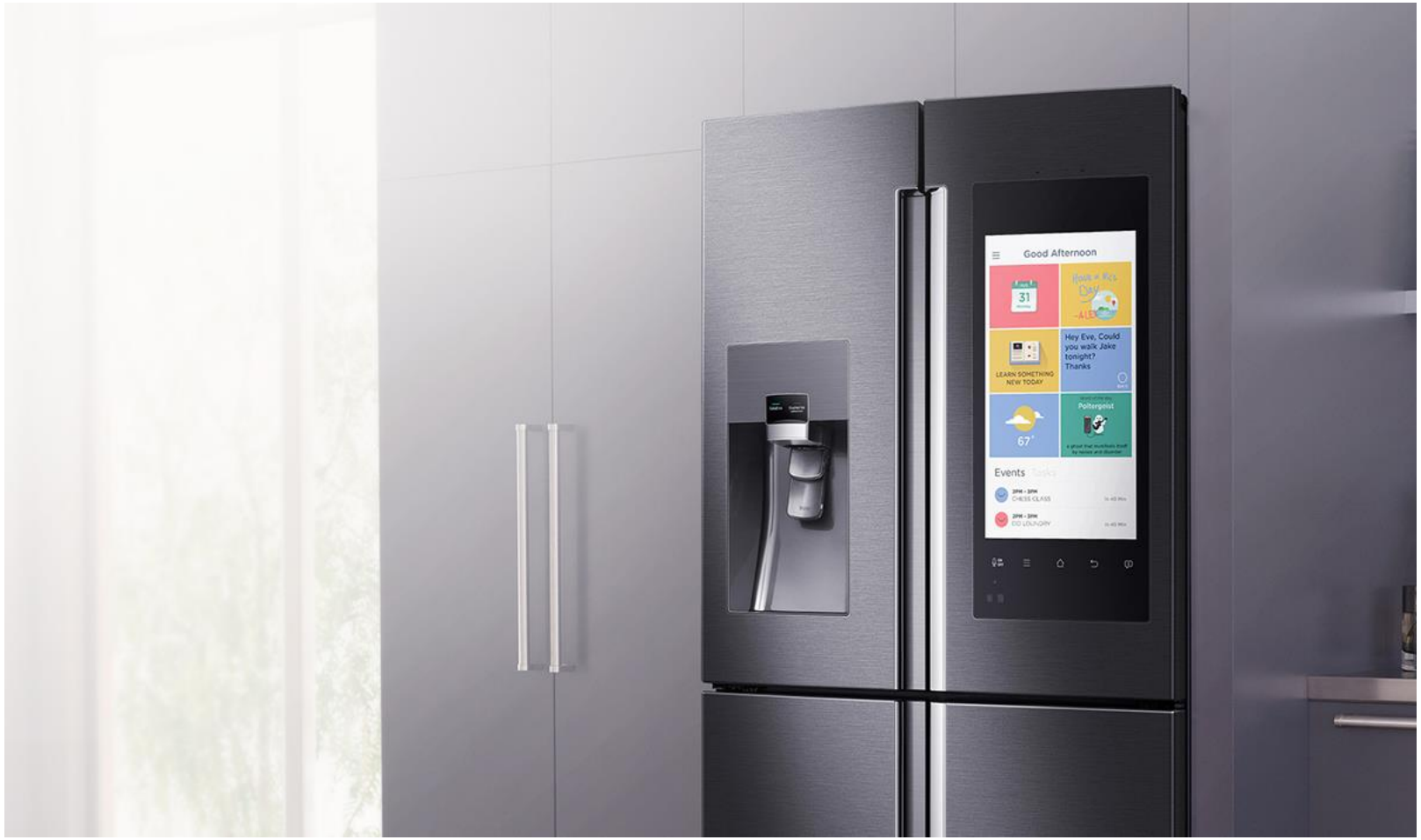
(The fourth edition is from 2020 but not yet free/not in library)

Today, AI is everywhere

Autonomous Cars



Intelligent refrigerator



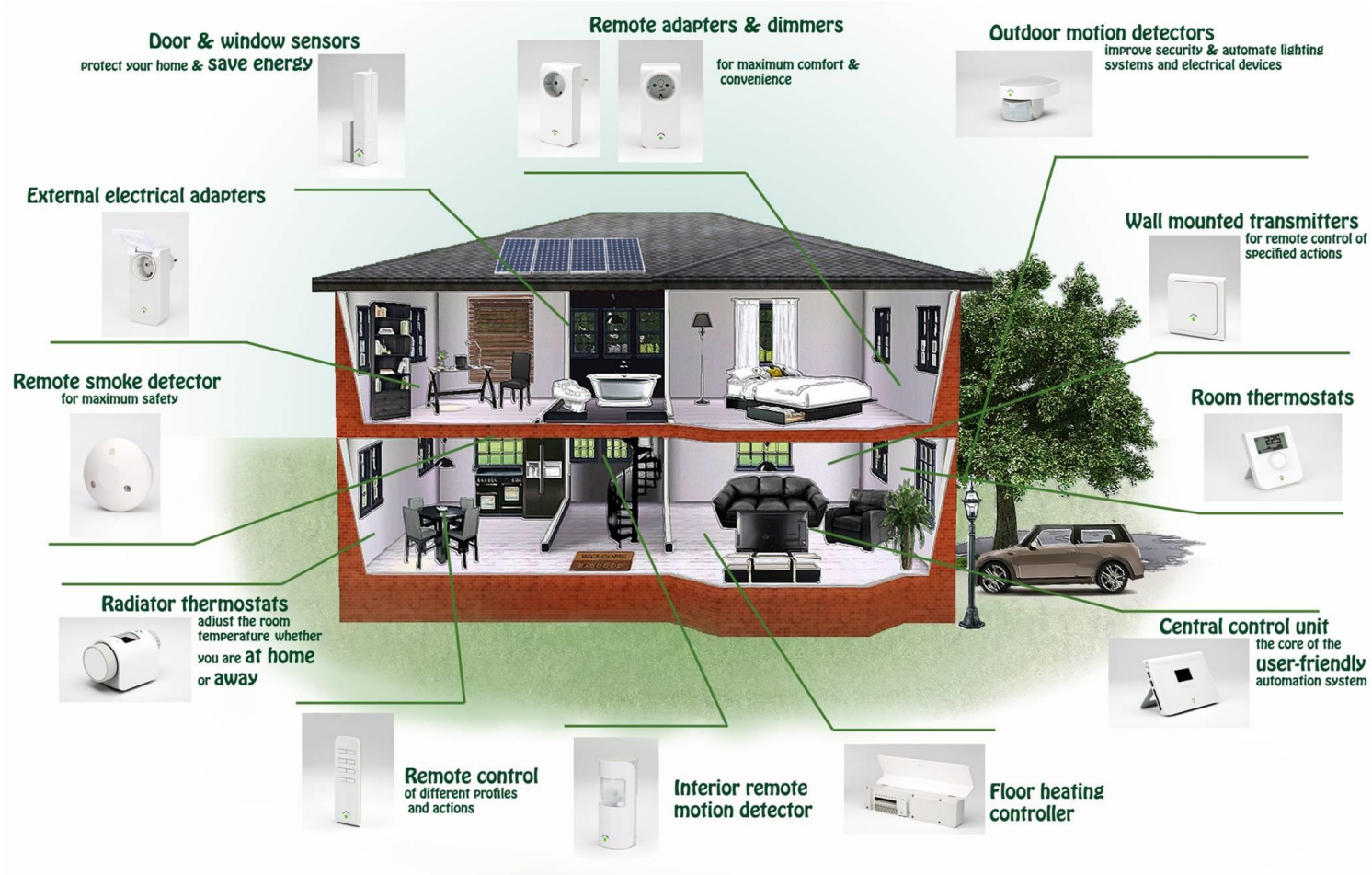
Autonomous pizza delivery

GPS


NDRIVE
Lijnbaansgracht
Rozengracht
Hazenstraat
Elandsstraat
s100
Marnixstraat
De Clercqstraat
Hugo de Grootkade
1m30s
1.4
km
50
0 Kmh
Menu
1.0
km
De Clercqstraat
G400

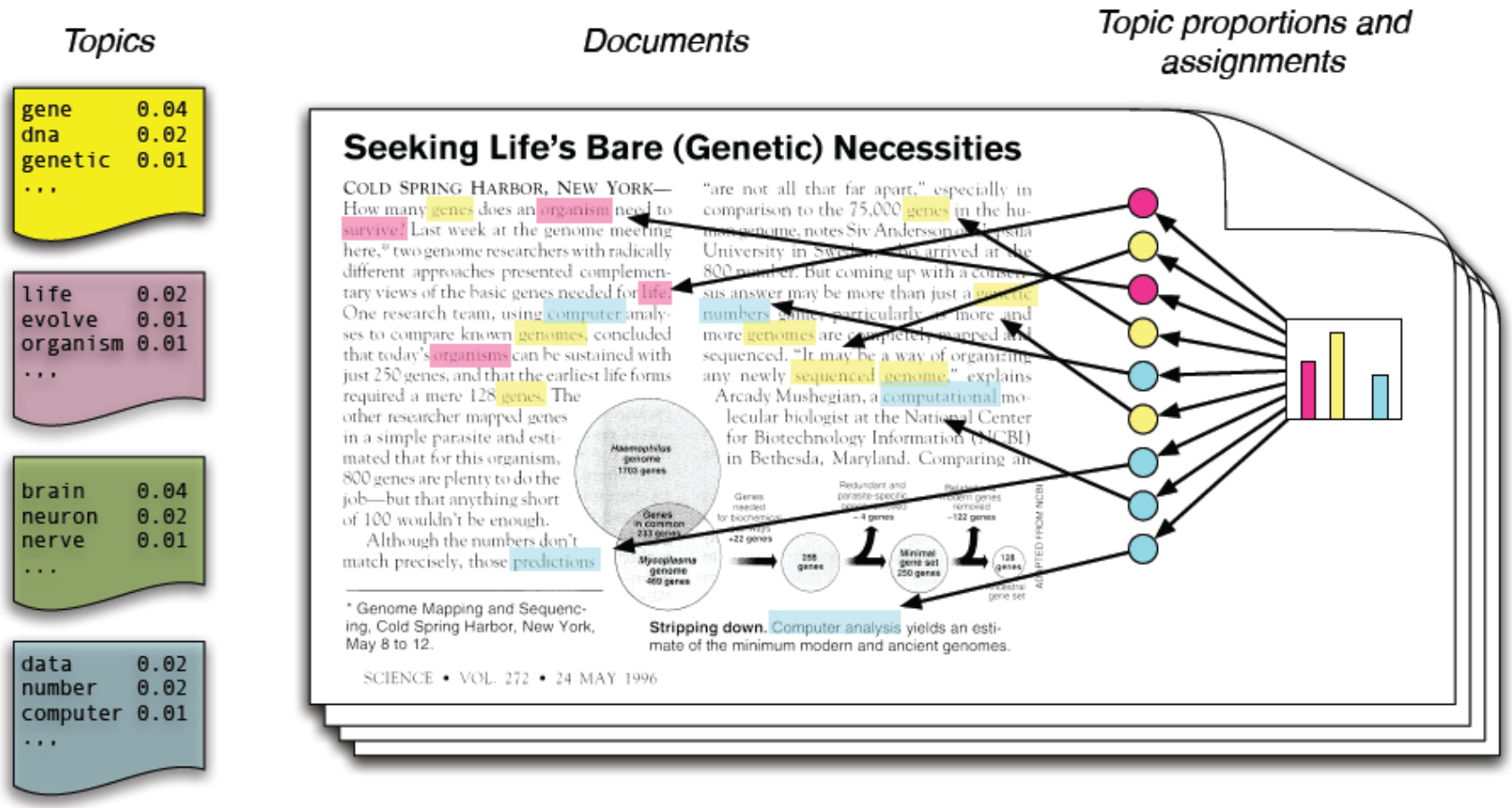
Drones

Smart homes / smart houses

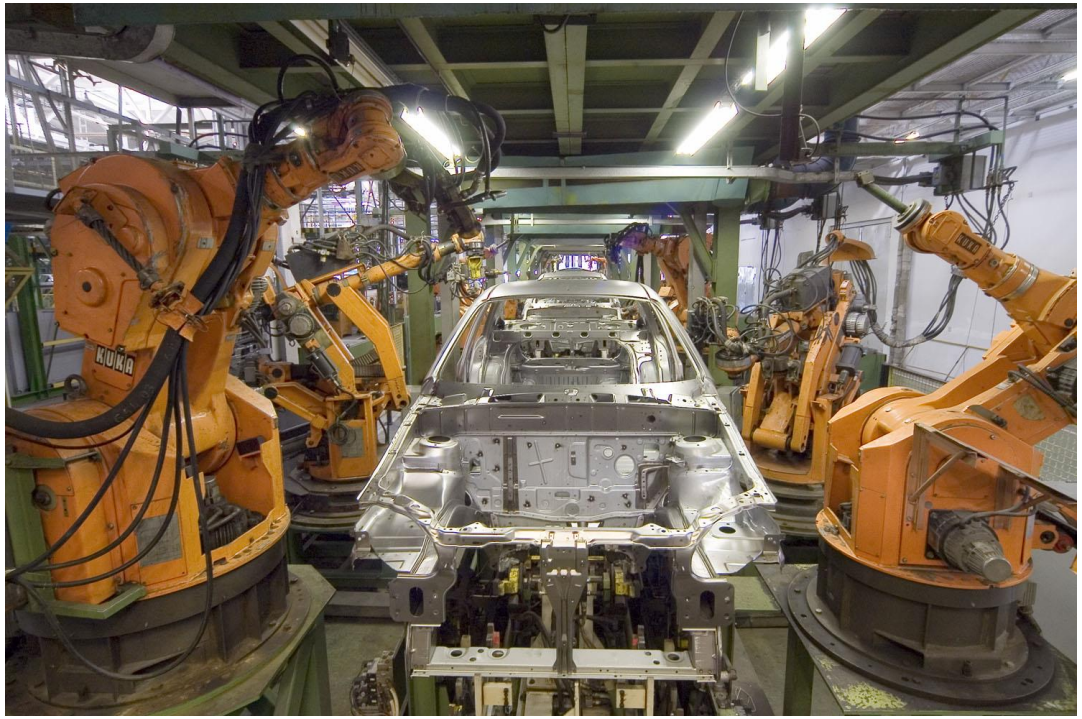


Precision agriculture

Text classification



Industrial Robots



KUKA Roboter GmbH, Germany

Service Robots

Asimo, Honda

AI applications

- Autonomous cars
- Intelligent refrigerators
- Intelligent pizza
- Robots that learn from being shown the movements
- AIs creating films, pictures, music
- Robots that sew
- Robots that cook
- Intelligent weapons
- Recommender systems
- AI in military defense
- AI in education
- AI in healthcare
- Robots in bloodstreams
- Ambient Intelligence
- Smart homes
- AI playing games
- Precision agriculture
- AI monitoring animals
- …