# Introduction to Artificial Intelligence

Fall 2019

Prof. Gilles Louppe
g.louppe@uliege.be

# Logistics

This course is given by:

- Theory: Gilles Louppe

- Exercises: Antoine Wehenkel

- Projects: Samy Aittahar, Pascal Leroy and Florian Merchie

Feel free to contact us at info8006@montefiore.ulg.ac.be for help!

# Outline

- Lecture 0: Artificial intelligence

- Lecture 1: Intelligent agents

- Lecture 2: Solving problems by searching

- Lecture 3: Constraint satisfaction problems

- Lecture 4: Adversarial search

- Lecture 5: Representing uncertain knowledge

- Lecture 6: Inference in Bayesian networks

- Lecture 7: Reasoning over time

- Lecture 8: Making decisions

- Lecture 9: Learning

- Lecture 10: Communication

- Lecture 11: Artificial General Intelligence and beyond

# Philosophy

## Thorough and detailed

- Understand the landscape of artificial intelligence.

- Be able to write from scratch, debug and run (some) AI algorithms.

## Well established algorithms and state-of-the-art

- Well-established algorithms for building intelligent agents.

- Introduction to materials new from research ($\leq$ 5 years old).

- Understand some of the open questions and challenges in the field.

## Practical

- Fun and challenging course project.

# Lectures

- Theoretical lectures

- Exercise sessions

# Materials

Slides are available at github.com/glouppe/info8006-introduction-to-ai.

- In HTML and in PDFs.

- Posted online the day before the lesson (hopefully).

- Minor improvements/fixes from previous years.

Some lessons are partially adapted from "Introduction to Artificial Intelligence" (CS188), from UC Berkeley.
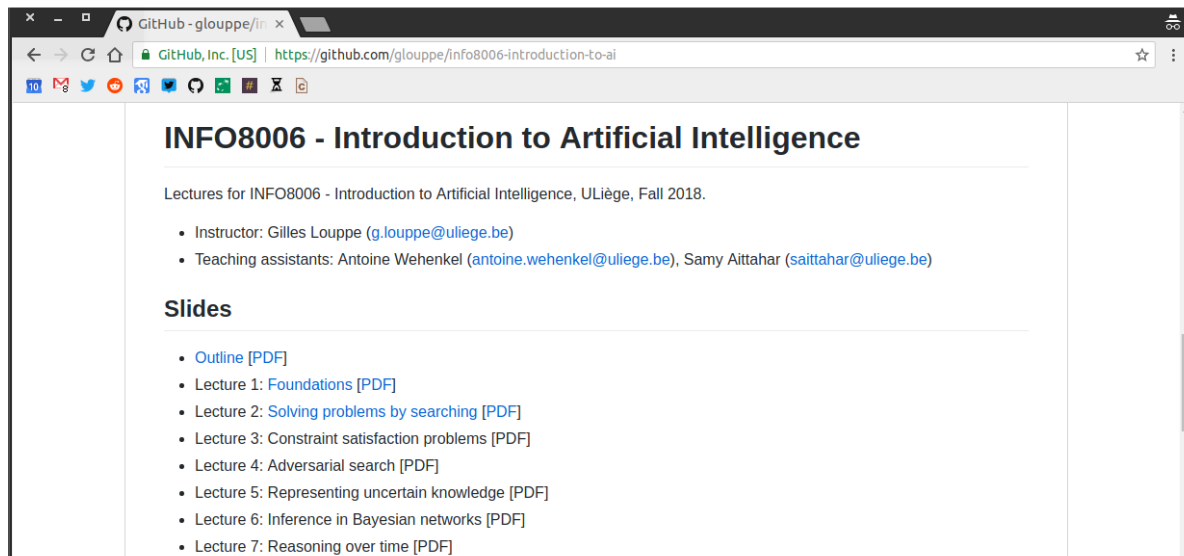
# Textbook
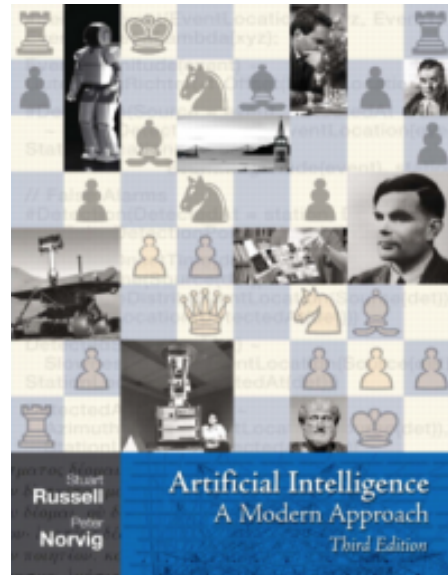


The core content of this course is based on the following textbook:

> *Stuart Russel, Peter Norvig. "Artificial Intelligence: A Modern Approach",*
> *Third Edition, Global Edition.*

This textbook is <span style="color:red">strongly recommended</span>, although not required.

# Projects

## Reading assignment

Read a major scientific paper in Artificial Intelligence. (Paper to be announced later.)

## Programming projects

Implement an intelligent agent for playing Pacman. The project will be divided into three parts, with increasing levels of difficulty.
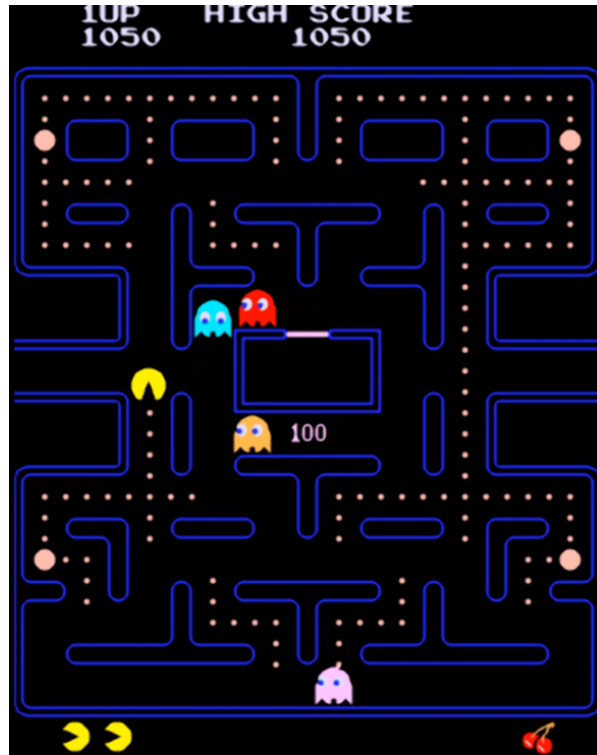
# Evaluation

- Written exam (60%)
  - Short questions on the reading assignment will be part of the exam.

- Programming projects (40%)
  - Mandatory for presenting the exam.

# Going further

This course is designed as an introduction to the many other courses available at ULiège and (broadly) related to AI, including:

- INFO8006: Introduction to Artificial Intelligence ← you are there
- ELEN0062: Introduction to Machine Learning
- INFO8004: Advanced Machine Learning
- INFO8010: Deep Learning
- INFO8003: Optimal decision making for complex problems
- INFO0948: Introduction to Intelligent Robotics
- INFO0049: Knowledge representation
- ELEN0016: Computer vision
- ELEN0060: Information and coding theory
- MATH2022: Large-sample analysis: theory and practice
- DROI8031: Introduction to the law of robots

Let's start!