Artificial Intelligence (IT3160E)

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Course structure

- Number of weeks: 16
  - Lectures: 12 – 13 weeks
  - Capstone project report: 3 – 4 weeks
- Time and location
  - Tuesday, 8:25 - 11:50; D9-401
- The course's folder

  https://users.soict.hust.edu.vn/khoattq/lectures/IT3160E-AI/
- Question + Advice:
  - E-mail: khoattq@soict.hust.edu.vn
  - Building B1, Room 706

Syllabus

- Introduction of artificial intelligence
- Intelligent agents
- Problem solving: Search, Constraint satisfaction
- Logic and reasoning
- Knowledge representation
- Machine learning

Course objectives

- Help the students have knowledge of:
  - The basic *concepts* in Artificial Intelligence
  - The basic *problems* and *methods* in Artificial Intelligence
  - The *applications* of Artificial Intelligence in practice

Evaluation

- Capstone Project (**M**): Maximum 10 points
  - Each project will be done by a group of 3-5 students
  - The topic for a project can be chosen freely, and should closely relate to intelligent systems
  - Build a demo of an AI-based system
- Final exam (**F**): Maximum 10 points
- Course mark (**G**): $\mathbf{G} = 0.4 \times \mathbf{M} + 0.6 \times \mathbf{F}$

Capstone Project

- Students work in groups, each consists of 3-5 students.
- Each group choose a problem/topic which should closely relate to intelligent systems
- Each proposal should be precisely described
  - The problem: short description, future application, …
  - The algorithms or tools, planned to be used
- **Project registration: before 16/3/2025**
  - Via Google Form (TBA)

Project examples: basic

- Build an intelligent system to solve a real-life problem, using one method from AI. For example:
  - Chess, using an intelligent strategy (e.g., A*, Minimax,…)
  - Build a demo of an AI-based system
- **Note:** Caro is not accepted in this semester
- Build a machine learning system to solve a real-life problem. For example:
  - Categorizing webpages, emotion detection from text,…

Project examples: challenging

- Build an intelligent system to solve a real-life problem, using modern technologies from AI. For example:
  - Chess, using deep neural networks
  - Image/music generation
  - …
- Evaluate a modern models or methods. For example:
  - Vision Transformers for image classification
  - …

Capstone Project: requirements

- The result will be presented in the ending period of this subject. *Every member is required to contribute to his/her project.*
- Project report:
  - **Source code**: save your code into one zip file
  - **Readme.txt**: describes clearly how to setup and run your code
  - **Written report:**
    - Introduce the problem to be solved
    - Details about the methods for solving the problem
    - Results of different evaluations, new conclusions/findings, …
    - The main components of your code
    - The difficulties in this project, and your proposed solution
    - …

Capstone Project: evaluation

- The evaluation of each project will be based on
  - The difficulty of the problem of interest
  - The appropriateness & quality of the chosen method/solution
  - The rigor of your evaluation on the chosen method/solution
  - The quality of the written report
  - The quality of the presentation
- Each project will have 15' for slide presentation & demo
- **If you use some existing libraries/packages/codes, you have to clearly declare your usage in the written report and slide presentation**
- ***Warning:* ChatGPT or similar systems *cannot be used* to generate codes or report**

Course materials

- Lecture slides
- Reference books
  - S. Russell and P. Norvig. *Artificial Intelligence: A Modern Approach (3rd Edition)*. Pearson, 2009.
  - T. M. Mitchell. *Machine Learning*. McGraw-Hill, 1997.