AI Foundation & Applications

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Course Outline

The 9-week course:

- Introduction of AI & Intelligent Agent (1 week)

- Machine Learning (2 weeks)
  - Feature Engineering
  - Linear Regression
  - Decision Trees

- Neural Network (2 weeks)
  - Artificial Neural Networks
  - Back Propagation
  - Learning Optimization

- Deep Learning (3 weeks)
  - Convolutional Neural Networks
  - Recurrent Neural Networks
  - Transformer
  - Diffusion Models

- Final Project (1 week)

Course Goal and Objectives

Course Goal: To provide students with a comprehensive understanding of Artificial Intelligence (AI) concepts, techniques, and tools, enabling them to design and implement intelligent systems.

Course Objectives:

- Understand the fundamental concepts of AI and intelligent agents.
- Apply machine learning algorithms, including feature engineering, linear regression, and decision trees.
- Develop and train neural networks using techniques such as backpropagation and optimization methods.
- Explore and implement deep learning architectures, including Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), and Transformers.

What You Can Do After This Course:

- Analyze problems and design intelligent solutions using AI techniques.
- Implement machine learning models for real-world applications.
- Build and optimize neural networks for complex tasks.
- Work with advanced deep learning architectures for image, sequence, and text-based tasks.

Course Information and Assessment

Course Materials:

- Lectures will be sent via Zalo or email.
- Students are required to print and read the materials.

Requirements:

- Strong background of Math
- Medium-level skill of Matlab and Python
- Hard-working and motivation

Course Information and Assessment

Course Assessment:

1. Mid-Term Score (X):
    - Weekly attendance (A).
    - Mid-term test (B).
    - Mid-term assignment (C).
    - Mid-term score $X = 0.2 * A + 0.4 * (B + C)$

2. Final exam score (F): Final project with Q&A interview

3. Final course grade (GPA): $GPA = (X + F) / 2$

Note

- Arriving late after attendance will be considered absent
- More than 02 absences will result in a ban from taking the final exam
- Students are not allowed to retake the exam/test
- Schedule changes are not permitted.
- Projects submitted after the deadline will be considered a non-submission.
- If plagiarism is detected in a report, the student will fail the course/assignment.