ELEC 042.23 - Artificial Intelligence

Final Project/Exam Guidelines

Expected output:

- Chatbot or Computer Vision Project [Group]
- Presentation slides [Group]
- Answers to evaluation questions [Individual]

Objectives:

1. To utilize AI technologies in solving real-world medical problems
2. To analyze the impact of AI technologies in the development and implementation of an effective healthcare system
3. To develop the critical and analytical thinking of the students
4. To value cooperation and teamwork by working with a group

Description:
The final project will be equivalent to the final exam. This will be by group. The final output will be presented in class as a group. Evaluation questions, however, will be answered individually. Students will choose either one of the following:

A. NLP Project

- Students will generate a chatbot that will simulate a social media account of their chosen healthcare domain.
- The healthcare domain will be subject to instructor approval.
- Sample domains (no duplicates): hospital, clinic with multiple doctors, laboratory, blood bank, heart/kidney centers, dialysis center, center for disease control, nursing homes, rehab care facilities, pharmaceutical companies, public health, veterinary clinics, R&D labs, etc.
- Include the following in your presentation slides:
    - Background about the healthcare domain
    - Details about the chatbot
    - Knowledge base
    - References for your knowledge base
    - Issues and challenges
    - Other relevant information
- Presentation time and demonstration of output, including Q&A, limited to 20 minutes per group.

B. Computer Vision Project

- Students will propose a computer vision project using their own dataset (if available). Note: If you choose to pursue a CV project, the dataset must be secured first before your instructor can approve your proposal.
- The dataset must be:
    - From a reputable source (try checking if there are already available datasets in your program that you can use)
    - MLS related
    - Number of images: at least 1000 images (if < 1000, discuss with your instructor for a workaround)
    - Must be something you are familiar with since you will be the ones who will annotate
- Split the images into training, validation, and test sets. Annotate the images and perform the computer vision task (classification, object detection, etc.)
- Conduct an analysis of the results.
- Include the following in your presentation slides:
    - Information about the dataset and the computer vision task
    - Pre-processing (if any)
    - Annotation
    - Results (training, validation, and test)
    - Issues and challenges
    - Other relevant information
- Presentation time and demonstration of output, including Q&A, limited to 20 minutes per group.

Schedule:

- Progress checking on these dates: _____ (equivalent to TLA)
- Presentation of output: _____

***Evaluation questions [individual] (to be given during presentation day)

Rubrics (60/60) - 50 points Group + 10 points Individual

60	10	8-9	7-6	5
Specifications	Student follows the specifications.	Student follows the specifications but has minor issues	Student follows most of the specifications but missed a few (not more than 2)	Student does not follow the specifications
Implementation and Execution	Implementation is complete, well-executed, and produces reliable results with evidence of thorough testing and refinement.	Implementation is complete, demonstrates good effort, and results are reliable but has minor issues in testing and refinement.	Implementation is mostly complete, demonstrates some effort, and results are moderately reliable but lack thorough testing and refinement.	Implementation is incomplete or poorly executed, and results are insufficient or unreliable.
Technical Depth	Provides a thorough explanation of AI concepts and the technical aspects.	Explains most technical aspects well but lacks depth in some areas.	Some technical details are incorrect or missing.	Lacks necessary technical details, missing or incorrect information.
Interpretation of results (FOR CV PROJECT ONLY)	Student provides a logical interpretation of the results and findings.	Student provides a logical but incomplete interpretation of the results and findings.	Results are merely stated. No interpretation given.	Student does not provide any result and no interpretation is given.

Research and information gathering (FOR CHATBOT PROJECT ONLY)	Thoroughly conducted research on the domain. References are from reputable sources.	Good enough effort in researching the domain. References are from reputable sources.	Limited information on the domain is provided. Minor issues on references used.	Very little effort was put into researching the domain. Questionable or lacking in references.
Overall indication of learning	Explanation used to justify and explain decisions, strategies, findings, and/or solutions is provided and is supported by evidence/details and includes relevant information from the student's experience beyond the requirements of the project.	Explanation used to justify and explain decisions, strategies, findings, and/or solutions is provided and is supported by evidence/details.	Explanation used to justify and explain decisions, strategies, findings, and/or solutions is limited or incomplete.	Explanation used to justify and explain decisions, strategies, findings, and/or solutions is not relevant to the project or is missing.
Academic level of answers (INDIVIDUAL; ANSWERS TO EVALUATION QUESTIONS)	Answers show understanding, directly reflect class discussions, and include higher order thinking.	Answers show understanding and reflect class discussions. A few answers are lower level, most are higher order thinking.	Answers are basic and mostly lower level.	Answers are limited and/or do not accurately reflect class discussions.