COSC423/523: Applied AI Project

Overview • Milestones

Overview

This project is required for all students enrolled in COSC 523. It is optional for students enrolled in COSC 423. This project requires that you:

- Pick an application domain that interests you.
- Identify a problem in that application domain.
- Choose a project pathway.
    - **Pathway #1: AI as a Tool**: Introducing and evaluating a modification to an existing algorithm (e.g., A*), e.g. Path Planning with Modified a Star Algorithm for a Mobile Robot (https://www.sciencedirect.com/science/article/pii/S187770581403149X). Projects in this pathway should:
        1. Introduce and describe a new technique.
        2. Implement the technique.
        3. Design an evaluation with empirical or simulated data.
        4. Compare the technique's performance with one existing technique.
    - **Pathway #2: AI as an Application**: Building machine learning models for a particular domain setting and evaluating them appropriately, e.g. predicting /r/AITA votes with data from Reddit (/pubs/icwsm2021-AITA.pdf). Projects in this pathway should:

1. Find or collect a dataset for machine learning use.
2. Implement and train models with the dataset, i.e. with scikit-learn or Keras.
3. Design an evaluation that compares the performance of multiple models.

- **Pathway #3: AI as an Interface**: Implementing interfaces that act "intelligently" and facilitate recommendations and/or search, e.g. [Microsoft's LookOut system](https://dl.acm.org/doi/abs/10.1145/302979.303030) (https://dl.acm.org/doi/abs/10.1145/302979.303030). Projects in this pathway should:

    1. Describe a scenario for integrating intelligence (e.g., recommendations) into an interface.
    2. Implement an interface prototype that demonstrates the concept.
    3. Conduct an informal user study with the prototype aimed at understanding how the new interfaces changes the nature of the application area.

- Prepare a proposal. Cite, at least, 5 or 6 research papers to motivate your project.
- Conduct an appropriate evaluation for your pathway.
- Write a final report about your project, its implementation, and your findings.
- Undergraduate students can form terms of up to 3 people, but graduate students may form teams of two

Goal	Description	Value	Due Date
Milestone 1: Proposal	Project Proposal.	5%	Oct 26
Milestone 2: Report	Design your dataset.	15%	Nov 30

Milestones

Below, you can cycle through the various Milestone tabs to see their requirements.

M1. Proposal

M2. Report

The objective of the Milestone 1 (M1) is to submit a one-page project proposal. Far too often, AI techniques and methods are applied to problem spaces that "don't matter". However, an important consideration for "what matters" is that it is inherently

debatable (https://arxiv.org/pdf/1806.04510.pdf). We make thousands of decisions each day that influence us in small, but meaningful ways. Project proposals should hone in one such decision.

I. Milestone Requirements

This milestone requires that your team successfully identify a problem you have chosen for your project. The requirements of this milestone are as follows:

1. Your team must have the instructor's permission that a topic is suitable for the course.
2. Your team's setting must be compliant with the constraints outlined above.
3. Your team must submit a one-page document, by the due date, that includes the following sections:
   - **Problem Description:** A clear articulation of the problem and the project pathway that the project falls under.
   - **Problem Motivation:** A brief paragraph describing why the problem matters.
   - **Planned Activities:** An overview of the activities that will take place during the project.

Note: Your report must be submitted by 11:59pm on October 26 via Canvas.