**School of Information Technologies and Engineering, ADA University**

**CSCI3613 – Artificial Intelligence**

**Fall 2024**

**Course Project Proposal**

# Team <7>

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# Project – **Course Scheduling System**

## Problem formulation

**Formulate the problem. What type of task is it? (50-100 words)**

The main purpose of this project is to implement and deploy a course scheduling system that achieves the task by considering classroom assignments, instructor schedules, and student course selection. Additional considerations can be made on classroom sizes, course requirements, time slots, faculty constraints, and course durations. The mentioned factors are subject to change through the ongoing process. The given problem is a constraint satisfaction problem (CSP) requires optimization of the sources under given constraints. The solution should conclude the task by satisfying all the constraints while deciding on a final decision. This approach is highly used in universities or academies to obtain a smooth scheduling and management.

## Method

**What AI techniques are you planning to apply? (50-100 words)**

Our group investigations on the topic gave us insights on the future plans by observing the real similar applications. Currently, we plan to apply constraint satisfaction problem techniques, mainly focusing on backtracking search with heuristics i.e., minimum remaining values (MRV) and least constraining value (LCV) to have the search smoothly. Depending on the process we can also switch to constraint propagation or some local search algorithms such as hill-climbing or simulated annealing. By these algorithms and search methods we hope to reach the final decision more efficiently and straightforward.

Intended experiments

**What experiments are you planning to run? How are you planning to evaluate your algorithm(s)? (50-100 words)**

After having initial parts of the project ready we are planning to have some experiments in order to evaluate the algorithms and overall, the quality performance of our solution. The recent data (university exam scheduling, student scheduling portfolio, and California university fields of study distribution) that we have found for this purpose will be our main source of training and testing the algorithm properly. We will make an extensive analysis on the found data to decide on one to proceed. These experiments will contain simulating various scheduling scenarios with different sets of constraints e.g., modifications on classroom capacities, multiple professor availabilities, and adjustments on the class prerequisites. In the end of the day the evaluation will be based on the quality of the final schedules and appointments by meeting all the constraints.

**Data Recourses:**

<https://www.kaggle.com/datasets/smrezwanulazad/exam-schedule/data>

<https://www.kaggle.com/datasets/thedevastator/california-university-fields-of-study-distributi>

<https://www.kaggle.com/datasets/annaskoda/student-scheduling>