



Engineering, Design and Society
1500 Illinois Street
Golden, Colorado 80402

Engineering Design and Society Capstone Teaming Project

Background

The Colorado School of Mines Engineering Design and Society Capstone Program encompasses 450 students majoring in Mechanical, Electrical, Civil and Humanitarian Engineering. Capstone Design@Mines collaborates with industry, government agencies and community organizations to put students on the front lines of innovation and discovery through real-world challenges. Each student is assigned a design team working on a year-long project. The teaming process was manual and took hours to complete! A CS Field Session team began improvements, but there is still more to be done.

Project Description

With each EDNS 491/492 program cycle, over 450 students have to be assigned to 60+ projects. Each project has a preferred team size and a preferred mix of majors. For example, Ball Aerospace may sponsor a project with a recommended team size of 6 with a recommendation of 4 Mechanical and 2 Electrical majors. Capstone students complete a survey and pick their top 8 choices of projects. With the student preferences and project requirements, students are assigned a capstone project. Ideally, every student gets their top choice and all projects are filled with exactly the mix of student engineering disciplines requested by the client.

This project was run by field session students in the Summer of 2021. While the algorithm and process for selection have vastly reduced the time needed to complete this task manually, there are areas where improvements can be made.

This project entails automation of this Capstone teaming project

1. Refine algorithm to reduce the number of unassigned students
2. Integrate the student project preferences with the client's project requirements to team the students and ensure teaming size is prioritized, particularly for larger design studios
3. Create a more user-friendly interface
 - a. Streamline a process for selecting data sources
 - b. Improve input data options for those client's requesting students

Stretch goals include

1. Integration with Mines multi-pass
2. Creation of student survey to gather project request
3. Email students with project assignment

Desired Skill Sets

1. Algorithm development and evaluation
2. Database structures

Preferred Team Size

3-5 students

Location of Work

Mines Campus

Client Liaison

Chelsea Salinas

csalinas@mines.edu