



COLORADO SCHOOL OF MINES

Background

Every student entering Mines is governed by a 'contract' whose specifics are set forth in the catalog, i.e., if a student completes the specified requirements, the school will grant them a degree. Several departments have deciphered and consolidated these requirements, often in the form of a flowchart indicating required courses along with the specified prerequisites. However, changes can occur from year to year which results in a synchronization problem between the requirements specified in the current catalog and these department created flowcharts.

Project Description

In an effort to create a tool to automate the catalog-to-flowchart process, this project will:

- Implement natural language processing techniques to parse the appropriate requirements from the university catalog.
- Incorporate derived requirements into a visual representation course pathways (e.g., flowchart, heat map dependent on prerequisites, block diagram, etc.)
- Using predictive analytics, identify potential bottlenecks, critical courses to complete or challenging sequences (if grade data is available)

Depending on the implementation time and successful completion of these tasks, enhancements may include (incorporation of grade data (if possible)) development of a 'recommendation system' to suggest optimal course sequences, development of a user interface to allow customization of the resulting flowchart, or specification of minor or any additional user-specific requirements.

Desired Skill Sets

- Some experience with natural language processing and text parsing.
- Some basic graph theory to potentially create and/or visualize course flowcharts.
- Some fundamental understanding of user interface design.
- Possibly some database understanding if any kind of intermediate database is to be used.