Keshane Gan

CPSC 490 Proposal

Advisor: James Aspnes

Scheduling Meetings between Teachers and Students based on Availability

Motivation

In one of my organizations, the members must be matched up with other students (“candidates”) who wish to join. The members give the candidates weekly lessons on one instrument. In order to match members with their candidates, each person – both members and candidates – submit a set of times during which they are free. Each year, there are between 15 to 20 members and 50 to 100 candidates, so each member should be matched with no more than 5 candidates but no fewer than 4.

There are certain constrains to the member-candidate assignments. Candidates must be taught by a member who is at least one class higher (e.g. a sophomore may be taught by a junior, but not by another sophomore). Graduate students must be taught by a senior undergraduate if there are no graduate students in the organization. Candidates should have a similar level of past musical experience as the member, but the member should not have a significantly lower level of musical experience. Candidates must not be taught by a member whom he or she already knows.

There are also constraints on lesson times. There may only be one lesson at a time. Lessons taught by one member should be scheduled in blocks of two or three consecutive lessons at a time.

With so many factors to consider, the members in charge of putting this schedule together often spend several hours doing so. I aim to automate this process and to answer this problem within minutes.

How

The assignment problem is a natural fit to this situation. The member-candidate assignment constraints can be translated as costs. However, the one complication is the assignment of lesson times to the member-candidate pairs. The availability constraint is the strictest one and often rules out perfect member-candidate assignments. In this project, I seek to implement a method of assigning members to candidates and to lesson slots. Some research will be needed to figure out the best way to tackle this problem. Once the implementation is in place, I will also create a web interface for members and candidates to submit their information.