COMP 445

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Project Proposal

**The Problem:**

At the IFCA Youth Convention, delegates (students) participate in Bible quizzing and Ministry Training Areas (MTAs), among many other activities. Based off the Bible quizzing bracket, there are time when many of the delegates (students) are unable to participate in their MTAs.

There are many different types of MTAs, including apologetics presentations, preaching, music, puppet shows, skits, etc. These MTAs can just involve one student (i.e. a preaching presentation) or can involve many (i.e. a choir). There are specific times when each type of presentation is to be presented (i.e. puppet shows are only on Wednesday afternoon from 2PM to 5PM). Furthermore, different presentations can take different lengths of time.

Each MTA must be presented at a time when all participating students are available, and it must be in the given range for that MTA type.

We are going to implement algorithms that will create a schedule for all MTAs such that no delegates have any conflicts and are given a buffer of period of at least minutes (a number to be decided later in the process) between commitments.

**Generating Problem Instances:**

To generate problem instances, we will randomly generate different delegates. Then, we will block out different times for some of the delegates for Bible quizzing (but not all). Finally, we will randomly create MTAs of different types, each with varying numbers of students.

**Algorithms:**

CSP Backtracking Search – Seth Harmon

Remembering No-Goods – Keith Graybill

**Variance in Experiments:**

We will vary our experiments by increasing the congestion of the schedule. This would include increasing the average number of MTAs per student, the number of students, the total number of MTAs, and the amount of time blocked off for Bible quizzing.

**Evaluation Metrics:**

Our primary evaluation metric will be the running time of our algorithms for specific numbers of assignments made.

We will also measure (as required) the fraction of instances where a solution is found within the time and space limits.