# A Constraint-Based System for Hiring and Managing Graduate Teaching Assistants

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We have designed and implemented a system for the management of Graduate Teaching Assistants (GTAs) in our department. The system is based on Constraint Processing techniques and is operated through web-based interfaces. The task is to assign GTAs, based on their qualifications, availability, and preferences, to academic tasks over a semester such as grading, supervising labs and recitations, and teaching introductory classes. Typically, every semester, the department has about 70 different academic tasks and can hire between 25 and 40 GTAs. The problem is often tight and sometimes over-constrained. In the past, this task has been performed manually by members of the staff and faculty. Tentative schedules were iteratively refined based on feedback from faculty and the GTAs themselves, in a tedious and error-prone process lingering over 3 weeks. We have built web-based interfaces to streamline the collection of data and specification of constraints. Further, we have implemented a number of constraint-based functionalities that assist the human manager in generating solutions interactively and automatically [1]. The modeling efforts started in Spring 2001 [2]. The prototype system has been used since Fall 2001 and is continually being enhanced. The current system has decreased the amount of time and effort spent on the task and yielded assignments that gained everyone's approval. The interactive component consists of an interface for viewing and manipulating the constraint model from a task-centered and a resource-centered perspectives. The set of algorithms for automatic problem-solving includes a (deterministic) backtrack search with various ordering heuristics [2], a local search [3], a multi-agent based search [3], and a randomized backtrack search with a new restart strategy [4]. Future work includes extending this set of algorithms, designing an 'algorithm driver' for allowing them to collaborate, and implementing functionalities for allowing the user to visualize and combine (sets of) solutions. This work is supported by the Department of Computer Science and Engineering, and NSF grants #EPS-0091900 and CAREER #0133568.

## References

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