Cobi: Community-Informed Conference Scheduling

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Abstract

Creating a schedule for a large multi-track conference requires considering the preferences and constraints of organizers, authors, and attendees. Traditionally, a few dedicated organizers manage the size and complexity of the schedule with limited information and coverage. *Cobi* presents an alternative approach to conference scheduling by engaging the entire community to take active roles in the planning process. It consists of a collection of crowdsourcing applications that elicit preferences and constraints from the community, and software that enables organizers and other community members to take informed actions based on collected information.

Introduction

Creating a compelling schedule for a large conference is a difficult task. To better understand this challenge, we observed the schedule creation process for CHI, the largest human-computer interaction conference. CHI 2013 received over 2000 submissions and accepted more than 500 to be scheduled in 16 simultaneous sessions spanning four days. The current schedule creation process at CHI involves two main stages. First, once papers are accepted, the technical program chairs and 15-25 committee members create small groups of papers to build a rough preliminary schedule. This process is paper-based, collaborative, time-consuming, and dependent upon the individuals organizing the papers. In the second stage, the conference chairs refine this rough schedule to create the final program. They attempt to resolve conflicts, fix sessions with stray papers that do not fit, and generally look for ways to improve the program. The chairs make most changes via manual inspection.

Despite organizers' best intentions and efforts, previous CHI programs often contained incoherent sessions, similarly themed sessions that run in parallel, and author-specific conflicts. Several aspects of the process contribute to these problems. First, due to the organic nature of how organizers make connections between papers, many sessions have odd papers mixed in. Second, because the process does not capture affinities between papers in different sessions, it is difficult for organizers to create more cohesive sessions. Third, organizers are often unaware of the preferences of authors and attendees, which can lead to sessions of interest being scheduled at the same time. Finally, the lack of tools for managing constraints and the sheer size of the schedule make it difficult for organizers to make informed decisions when finalizing the schedule.

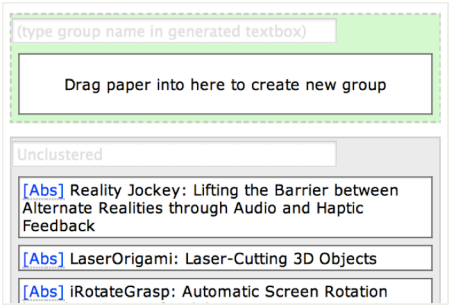


Figure 1: *Partial clustering asks contributors to explicitly group papers into sets of related papers.*

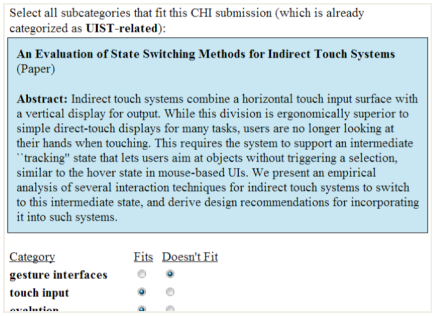


Figure 2: *Cascade asks contributors to generate category names for papers and to determine whether the categories are a good fit for a paper.*

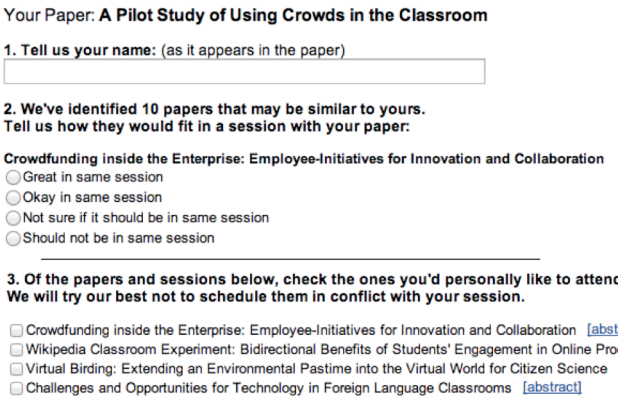
Cobi presents an alternative approach to conference scheduling that engages the entire community in the planning process. Cobi consists of a collection of crowdsourcing applications that collect preferences, constraints, and affinity data from community members, and a visual scheduling interface that enables organizers to make informed actions toward improving the program.

Committee members cluster papers

Cobi collects the affinities between papers so that similar papers can be grouped together and not placed in opposing sessions. Cobi recruits committee members to group papers in their area of expertise. We tested two interfaces for grouping papers. In partial clustering, contributors create groups explicitly (Figure 1). In Cascade, contributors first propose category names and then determine which papers fit into which categories (Figure 2). In the deployment for CHI 2013, 64 associate chairs created affinities for 1722 pairs of related papers (André et al., 2013). Our next iteration will enable committee members to collaborate synchronously in creating a taxonomy of paper themes.

Authors refine paper affinities

Authors of accepted papers are in a unique position to judge whether other papers are related to their paper. They also have an incentive to provide input so their paper appears in a session with related papers. Cobi invites authors of accepted papers to identify papers that would fit well in a session with their own and that they are interested in seeing (Figure 3). To produce a small list of papers for authors to judge, we seed suggestions based on affinities identified by committee members and by running TF-IDF comparisons on paper titles and abstracts. This process generates additional fine-grained affinity information among papers that is useful for session creation and later for scheduling. In the deployment for CHI 2013, 645 authors expressed 8651 preferences and constraints, covering 87% of the accepted papers.


Your Paper: **A Pilot Study of Using Crowds in the Classroom**

1. Tell us your name: (as it appears in the paper)

2. We've identified 10 papers that may be similar to yours. Tell us how they would fit in a session with your paper:

Crowdfunding inside the Enterprise: Employee-Initiatives for Innovation and Collaboration
- Great in same session
- Okay in same session
- Not sure if it should be in same session
- Should not be in same session

3. Of the papers and sessions below, check the ones you'd personally like to attend We will try our best not to schedule them in conflict with your session.

- Crowdfunding inside the Enterprise: Employee-Initiatives for Innovation and Collaboration [abst
- Wikipedia Classroom Experiment: Bidirectional Benefits of Students' Engagement in Online Pro
- Virtual Birding: Extending an Environmental Pastime into the Virtual World for Citizen Science
- Challenges and Opportunities for Technology in Foreign Language Classrooms [abstract]

Figure 3: *From a list of papers, authors judge which are related to their paper or of interest to them.*

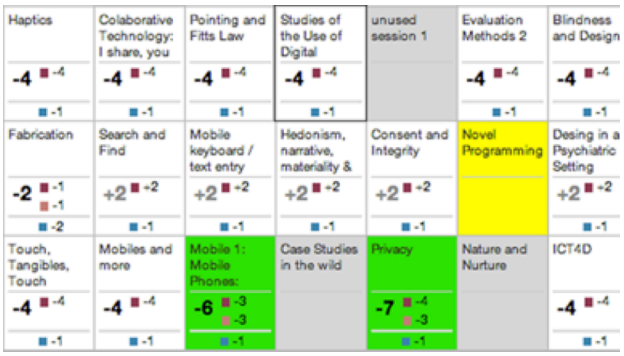


Figure 4. *The Cobi scheduling tool displays the change in the number of conflicts should the user swap the source session (yellow). The system recommends sessions that minimize conflicts (green).*

Conference organizers schedule sessions

Cobi's scheduling tool (Kim et al. 2013, Figure 4) integrates community preferences and constraints with constraint-solving intelligence. The interface helps organizers visually spot problems, edit the schedule, and resolve conflicts. It highlights both system-generated and community-provided conflicts and preferences, displays the consequences of potential edits, and recommends edits that best improve the schedule. In the live deployment for CHI 2013, the tool helped the organizers resolve 168 conflicts as they created the final schedule.

Attendees favorite papers & get recommendations

Attendees' preference for papers is a direct predictor for session popularity. We plan to collect such preferences from attendees before finalizing the schedule, which can inform session distribution and room assignment. The collected preferences, together with data from authors, can also provide social recommendations for attendees.

Demo at the Conference

Our proposed demo at HCOMP will include (a) the paper-affinity and session-making tool used by the program committee, (b) the scheduling tool used by organizers, and (c) the conference program tool used by attendees.

References

André, P.; Zhang, H.; Kim, J.; Chilton, L. B.; Dow, S. P.; and Miller, R. C. 2013. Community Clustering: Leveraging an Academic Crowd to Form Coherent Conference Sessions. In *HCOMP 2013*, to appear.

Kim, J.; Zhang, H.; André, P.; Chilton, L. B.; Mackay, W.; Beaudouin-Lafon, M.; Miller, R. C.; and Dow, S. P. 2013. Cobi: A Community-Informed Conference Scheduling Tool. In *UIST 2013*, to appear.