

The Future of STOC

Summary

In order to have the STOC conference fulfill its role as the flagship conference for SIGACT and the theoretical computer science community, we recommend restructuring the conference along the lines of a traditional large science meeting focusing more on increasing participation and interaction less on accepting a small number of prestigious papers.

This document is directly solely at STOC and expects no major changes at other theory conferences including FOCS, SODA and ICALP.

History

The theoretical computer science community has grown tremendously almost continuously from its roots in the 1960's to this day. In 1969, ACM established the Symposium on the Theory of Computing (STOC) as a companion conference to the IEEE Symposium on Switching and Automata Theory (SWAT) to give multiple annual outlets to newly developed papers in theoretical computer science. In 1974, SWAT was renamed the Symposium on Foundations of Computer Science (FOCS).

Over the years, as our community has continued to grow, we have seen some changes in our conferences. Both STOC and FOCS typically now have two parallel sessions and we have seen many new conferences focus on subfields of theoretical computer science.

In the 1980s STOC would draw about 300+ registrants with the 1987 STOC in New York hit a high of around 500 registrants. Despite the big growth of theoretical computer science over the past 25 years, the STOC conference still typically has around 300 attendees.

Structure

In scientific fields outside of computer science, scientific meetings take one of two forms. Either a small workshop with invited talks, specializing in a small area or a larger meeting designed to encourage participation and being a central meeting of a community.

STOC would take on that second role. The program committee for STOC would accept nearly all reasonable submissions, possibly limiting to at most one per attendee. Each speaker would get a short slot to give a presentation in several parallel sessions.

In order that participants can keep up with the exciting research outside their subdisciplines, the PC would invite a few plenary speakers talking about their groundbreaking results in theory (which have or will appear in other conferences or journals). Also the PC would organize tutorials in up and coming areas in theoretical computer science.

Proceedings and Awards

The proceedings would only have a page or two for each paper designed in a way so that it doesn't count as a conflict with other conferences. These short abstracts would have a link to a larger version of the paper available on an electronic archive or the digital library of another meeting. The PC would welcome submissions from papers that have appeared in other recent conferences or might appear in conferences in the future.

The PC would continue to present the Danny Lewin Best Student Paper Award and the Best Paper Award. STOC would also co-host the Gödel Prize and the Knuth Award and Lecture alternating with ICALP and FOCS respectively as it currently does.

Breaking the Symmetry with FOCS

Since the inception of the STOC conference, STOC and FOCS have had a nearly identical structure. Occasionally through the years one or the other has had parallel sessions while the other didn't but for the most part, even though run by separate societies, the conferences have had similar structure and equivalent prestige.

Given the growth in specialty conferences including SODA, there is less of a need of two identical major theory conferences each year. We recommend splitting the roles of these meetings. The FOCS conference would continue to choose and present only a selected number of highly prestigious papers in theory. In fact, the prestige of having a FOCS paper will increase since STOC will no longer serve this role.

Effect on Young Researchers

Some have expressed concern that graduate students, postdocs and young faculty would lose an outlet to present their work in a prestigious meeting. These young researchers would still have a more prestigious FOCS, SODA and other conferences to mark their work. And many more young researchers, who typically don't get their papers into STOC and FOCS, would now have a chance to present their research to a general theory audience.

Conclusion

Theoretical computer science does not have a meeting that does a good job bringing together the community on a regular basis. STOC, as the flagship conference of ACM SIGACT, the Special Interest Group representing theoretical computer science, should be that meeting. By following the example of large scientific meetings in other fields, STOC can achieve that goal.