

Trends From Computing Education Research Conferences: Increasing Submissions and Decreasing Acceptance Rates

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ABSTRACT

We look into submission and acceptance rate trends over the last decade of Koli Calling, SIGCSE Technical Symposium, ITiCSE, and ICER. We observe an increasing trend in the number of submitted articles and a decreasing trend in the acceptance rates. We discuss possible explanations for the trends and consider implications of these trends for potential newcomers seeking to enter the field.

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1 INTRODUCTION

One of the things that does not seem to change over time is that curmudgeons (including the authors of this paper) grumble about how things were better in the past. Such discussions have been present also in Computing Education Research (CER) conferences, where researchers have pointed out, e.g., that finding reviewers seems increasingly difficult. Similarly, there have been complaints about decreasing acceptance rates.

In this work, inspired by recent *surface-level* studies such as [13] and deeper bibliographical studies [1, 8, 11, 12], we sought empirical evidence for – or against – this grumbling. Our research question for the present work is: *How have numbers of submissions and acceptance rates evolved in popular CER conferences over the last decade?* We answer the question with descriptive statistics of four conferences (a) Koli Calling, (b) SIGCSE TS, (c) ITiCSE, and (d) ICER. The data for the study is the number of paper submissions as reported in conference proceeding front matters and acceptance rates calculated based on the reported number of submissions and accepted papers.

2 RESULTS

Overall, during the last decade (2012–2022), a total of 8275 paper submissions were made to the four conferences, with an average acceptance rate of 32 %. The number of submissions and the acceptance rates over the years for the conferences are presented in

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Figure 1. Visual analysis suggests that there is an increasing trend in submissions, and a decreasing trend in acceptance rates. To negate or confirm the results of the visual analysis, we conducted Mann-Kendall trend tests [4, 5, 9] for the submission rates and acceptance rates of each conference. For the tests, we report p and τ values, contributing to our understanding of the results [15]. We do not make threshold-based claims of statistical significance [3] and do not perform corrections for multiple testing, as it could lead to too stringent interpretation of study outcomes [2, 10].

For number of submissions, the Mann-Kendall test results are ($p \approx 0.002$, $\tau = 0.81$) for Koli Calling, ($p \approx 0.001$, $\tau = 0.77$) for SIGCSE TS, ($p \approx 0.001$, $\tau = 0.77$) for ITiCSE, and ($p \approx 0.0003$, $\tau = 0.86$) for ICER. Similarly, for acceptance rates, the Mann-Kendall test results are ($p \approx 0.02$, $\tau = -0.57$) for Koli Calling, ($p \approx 0.007$, $\tau = -0.66$) for SIGCSE TS, ($p \approx 0.02$, $\tau = -0.57$) for ITiCSE, and ($p \approx 0.001$, $\tau = -0.77$) for ICER. These results are in line with the visual analysis suggesting an increasing trend in the number of publications and a decreasing trend in acceptance rates.

3 DISCUSSION

The trends from the last decade are in line with the anecdotal discussions that made us dive into the work. We see links with trends in the broader societal discussions and, potentially, change in the perceived value of computing. While programming has been a theme in schools already before the study period [14], in the last decade there have been initiatives such as President Obama’s CS For All¹. Such initiatives have increased the need for competent teachers as well as the visibility – and probably the desirability – of the field.

There are, however, other potential explanations for our findings. One contributing factor could be the self-feeding loop of rejected articles being resubmitted to conferences. Combined with new research, this increases the number of submissions which in turn decreases acceptance rates. As the reviewing process of articles is, in general, not fully deterministic due to individual differences between reviewers, this cycle makes it less likely that new articles will be accepted. This can also negatively impact the interest of reviewers who both have more articles to review and might have to review the same articles again and again, perhaps with only minor modifications.

The lower acceptance rates can also hurt the field in the long term. If the criteria for acceptance become too rigid, newcomers may find it more difficult to gain a foothold. As learning happens over time [7], and as scientific communities may tend to oppose change [6], it is possible that conforming to these practices becomes

¹Thanks, Obama! <https://obamawhitehouse.archives.gov/blog/2016/01/30/computer-science-all>

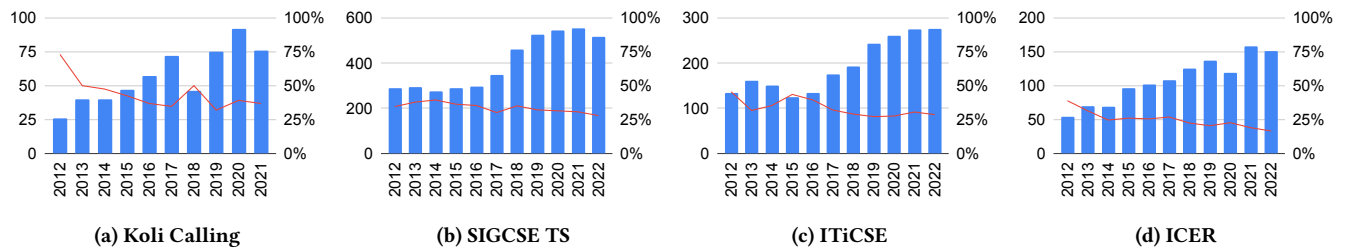


Figure 1: Submissions (blue bars) and acceptance rates (red lines) in the past decade for Koli Calling, SIGCSE TS, ITiCSE, and ICER.

a barrier that is hard to overcome for those outside the field. Given that it is often a requirement to have an accepted publication in order to receive funding to attend a conference, this again intensifies the self-feeding loop. This is exacerbated by the dualistic nature of conferences: conferences serve both formal communication in the form of publications as well as a way to receive feedback on ongoing research and consequently improve it.

What could be done to overcome these issues? A possibility would be to have longer conferences that would allow for more accepted papers. Another option would be the introduction of parallel tracks to conferences that have traditionally been single-track (e.g., ICER and Koli Calling). Lastly, it is possible that there is just a need for new conferences in the field due to the increase in the number of researchers who are interested in publishing Computing Education Research. Certainly, some form of legitimate peripheral participation is needed for continuing renewal of the field [7, 8].

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