

TOOLS: ISSCC PAPER SUBMISSIONS - INCREASING THE LIKELIHOOD OF SUCCESS

Tips on Increasing Your Chance of ISSCC Acceptance

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The Challenge

ISSCC is the foremost milieu for presenting original work in the area of solid-state circuits and systems-on-a-chip and related system considerations. Thus, it is not surprising that many engineering, design and computer professionals strive to present their work at the conference, where experts from industry and academe around the world gather to discuss the next generation of solid-state circuits and systems.

This article is intended as a guide for prospective submitters to improve their chances of paper acceptance. But, as someone wishing to submit a paper to ISSCC, you have a very basic and serious challenge: It is that the ISSCC Technical-Program Committee is very diligent in pursuing its goal of maintaining the high standards for which the conference is known, and there will be substantial competition from other submissions.

Key Criteria for Acceptance

There are two key requirements that each author must keep in mind when submitting a paper.

First and foremost is the technical quality of the work: Your paper will be read by expert reviewers (as many as 15 per paper!) who are very familiar with the state-of-the-art. You must convince them that the product of your work performs better than the most recent work of others, or describes an innovative concept and implementation.

Second is the quality of the draft manuscript: Your paper must allow reviewers to effectively evaluate your contribution and to compare it easily with previous work, and other submissions to the conference.

Early Considerations

Before submitting your paper, you should ask yourself the following questions:

- Does your paper advance previous work, or does it introduce a new design concept?
- Does the paper have hardware? In particular, has a chip been fabricated and tested?

While an innovative concept can be demonstrated through simulation, it is desirable to show results from a working chip.

- Does the topic of the paper fit within the scope of ISSCC? If so, within which of the subcommittees does the paper fit? (Note that the detailed topics covered by ISSCC are assigned to subcommittees, described in the Call for Papers at www.isscc.org/isscc.)

If the answer to any of these questions is negative, you may consider submission to another conference. In addition, if a substantial part of your paper has already been (or will be) published, you should not

submit the work, since the subcommittee will reject it due to pre-publication. (To find out more about what constitutes prepublication, consult the Call for Papers or the ISSCC Website.)

Technical Content

There are many good ways to write a paper and thereby to present your work in a clear and concise manner. The remainder of this article is only one method of doing so. While it is by no means the only one, it can be effective if done well.

Independent of your choice of style, bear in mind, when writing the paper, to emphasize specific new results with sufficient detail and data so as to be easily understood. Also include schematics and measured results for key circuits, whenever appropriate.

Further detailed comments on the properties of a good paper follow, by section, below. Note that this description reflects the order of your paper, not necessarily the order in which the sections may be written. For example, it is often best to write the conclusions first!

The Introduction

Start your paper with a brief introduction that clearly states the nature and context of the problem you are solving. Compare your approach with what others have done recently, highlighting how yours is different and better. An important technique is to make good use in the introduction of references to put your work into its correct context. References tell the reviewer that you are aware of the latest developments in the field. Use recent ISSCC references whenever possible; otherwise, emphasize IEEE journal and conference references. It is strongly recommended not to use old references, except to emphasize the time scale of the problem. Do not refer only to your own work. A good write-up typically has 4 to 6 key references. Comment briefly on each and every one of the items in your reference list, within your main text.

The Body of the Paper

Keep in mind that you have a maximum of only 1100 words for the body of the paper, so use the limited space carefully. Plan in advance, and make an outline, very much like you design a system architecture. Early on, give the specifications of your design. You should highlight and emphasize innovative aspects. Explain the importance of these features in terms of new design, improved performance (that is, power, speed, etc), achievements, as well as new technology, and how they advance the state-of-the-art.

The central part of the paper should explain details

of the approach you introduced earlier. Focus on the key ideas, and build up your arguments incrementally. It is always helpful to use a figure or diagram to illustrate your approach. Preferably show a circuit schematic, and explain briefly how the circuit works, and what is new about it. It is recommended that you include a die photograph, giving the dimensions of the chip and the technology that was used.

Measurement results are essential! Include measurements of the fabricated chip, and not just simulations. If you use simulation results, make it clear what has been simulated, and what has been physically measured on-chip. Explain briefly what measurements were done, and how. For power consumption and area measurement, state clearly what blocks are included (or omitted). Show the results on a graph, but summarize critical aspects in table format to highlight the specifications and performance metrics. Be precise and quantitative, and compare measured results against stated requirements or prior art. If appropriate, provide a figure-of-merit. Ideally, compare your results with those reported in relevant previously published ISSCC papers or other publications in the literature. Be straightforward in making the comparisons, and do not ignore bad results; discuss and explain any shortcomings, rather than ignoring them.

The Conclusions

The last paragraph or two should summarize all your important results, to give the reviewers a complete picture of the system/circuit and to convince them of the technical quality and accuracy of the results. Summarize briefly how the results advance the state-of-the-art.

Overall Guidelines

The Title

The title should be descriptive, giving a good idea about the paper's contents and the achievements presented. Do not make the title too broad or general, since it may appear to be a marketing or tutorial paper. An example of a title that captures some of the key aspects of a paper is "An 800mW 10Gb/s Ethernet Transceiver in 0.13 μ m CMOS." This title is much more descriptive than "A novel high-speed CMOS transceiver."

The Abstract

Each paper must have an Abstract of at most 325 characters that captures the key elements of the paper. The Abstract should be focused and factual, and provide a complete and quantified description of the work, including concrete performance data.

Don'ts

Minimize theory in the body of the paper. If theory is essential, summarize the results and refer to other sources of such material in one or two references. Correspondingly, refrain from giving too many equa-

tions. Your paper is not a Ph.D. thesis: only relevant equations are needed, if any! If an equation is presented, explain it briefly, but thoroughly. Similarly, do not write a tutorial paper. ISSCC submissions must disclose innovation concisely. Remember you have only 1100 words!

Unsupported expressions such as "Fastest," "Smallest," "Lowest power consumption," etc. should be avoided. It is much more helpful to be quantitative, precise, and explicit in making comparisons with earlier work.

A Common Reason for Rejection

A dominant reason why a paper is rejected is the lack of clear evidence of what is novel in the work, and the extent to which it advances the state-of-the-art. Successful submissions contain specific new results with sufficient detail and data to be understood, and schematics and measured results for key circuits, where appropriate. Correspondingly, if the paper is not written well, or written so that the reviewers cannot evaluate it, the chances of acceptance are going to be low. Thus, it is essential to pay attention to the quality of the write-up, as explained above.

Another reason for rejection is that the paper gives only simulations, or deals mainly with modeling, and has no hardware. Also, rejection is inevitable if a substantial part of the work has been published before the candidate upcoming ISSCC ("prepublication").

Summary

The most successful submissions to ISSCC are those that emphasize innovation and advancement of the state-of-the-art in solid-state circuits and systems-on-a-chip. Such submissions contain specific new results with sufficient detail and data to be easily understood, and with schematics and measured results for key circuits.

Disclaimer

It should be understood that this article merely provides suggestions and guidelines intended to improve the quality of your paper submission. Correspondingly, there is no guarantee that a paper, however closely conforming to these suggestions and guidelines, will be accepted.

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Resources: ISSCC Website: www.isscc.org/isscc

"How to Write a Paper for ISSCC" is available as a flash presentation, prepared for students at A-SSCC in November, 2006, at sscs.org/Chapters/07ChptrLnch/07FebCafe.htm