



MICCAI Conference Review Process

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Context

The purpose of this document is to define the Review Process for the MICCAI conference. The document is endorsed by the MICCAI 2016, 2017, 2018 and 2019 organizing committees. This document will be passed on, each year, from MICCAI organizing committee to the other in the hope to create a "sliding window" and consistency between years.

The document is heavily inspired by the previous Review Process developed by S. Ourselin, D. Hawkes, N. Navab, P. Golland, N. Ayache, and G. Fichtinger. The current review process version was prepared jointly by the MICCAI 2016, 2017, 2018, 2019 committees with the following people involved: L. Joskowicz, S. Wells, M. Sabuncu, T. Arbel, L. Collins, M. Descoteaux, S. Duchesne, L. Maier-Hein, C. Davatzikos, A. Frangi, J. Schnabel, D. Shen, and T Liu. We are grateful for all of their contributions.

The policies set within are born of a desire to enhance the previous process, by specifically:

- simplifying the process to increase compliance and enforceability;
- lowering the burden on participants;
- increasing review quality and retention;
- clarifying roles and responsibilities, to increase understanding from all participants:



- decreasing the appearance of arbitrariness in the decision making process, by being more transparent; and
- reducing costs.

As in previous MICCAI conferences, the goal of the MICCAI Conference review process is to select the best papers in each discipline. This selection should be fair, taking into consideration the specialized nature of our discipline and the size of our community; efficient, in not wasting valuable time, effort and funding from our peers; and just, in exploiting the consensus of peer comments. The changes over the previous process address the goals above and are in large part possible by using Microsoft's Conference Managing System (CMT) and exploiting recently developed add-ons that leverage tools from machine learning and computer vision conferences (detailed later).

General

This summary is made public so that all participants understand the review process and can plan accordingly.

The MICCAI 2017 review process will be chaired by the following individuals:

Program Chair: M. Descoteaux, U. Sherbrooke
Program Co-Chairs: D. Louis Collins, McGill U.
P. Jannin, U. Rennes I
L. Maier-Hein, DKF Z
M. Sabuncu, Harvard, MICCAI 2016 representative
J. Schnabel, KCL, MICCAI 2018 representative

The Program Chair will create two bodies of participants that are essential to the review process:

- The Program Committee (PC), composed of Area Chairs (ACs); and
- The College of Reviewers (Reviewers)

The following documents supplement the following guide, and are available on the MICCAI 2017 conference website:

Annex A MICCAI 2017 Timeline
Annex B Program committee member invitation letter
Annex C Reviewer invitation letter
Annex D Anonymization rules
Annex E Reviewing guide
Annex F Rebuttal guide
Annex G Preliminary program schedule for MICCAI 2017

A note on conflicts of interest

Conflicts of interest are inevitable in a community as networked as ours. To handle such conflicts, the MICCAI Program Chairs will rely on author's and reviewer's professional behaviour, augmented with automated means.

The main check for conflicts will be done using Researcher.cc, which is used by CMT, as well as other well-known conferences such as CPVR, NIPS, and ICML. Researcher.cc requires only a Google scholar profile (<https://scholar.google.com>) and DBPL profile (<http://dblp.uni->



trier.de) for ACs, reviewers and authors. No additional information is necessary. Using these two sources, Researcher.cc extracts institutional information and checks automatically for conflict.

For MICCAI 2017, we will automatically create Researcher.cc profiles from all names and emails exported from the Precision Conference System (PCS; used in prior MICCAI editions). Reviewers will then receive an email with detailed instructions to double-check their information and make changes if needed. Authors will also need to make sure they have a Researcher.cc account, and provide their Google scholar and DBPL profiles when submitting their papers to manage conflicts between authors and reviewers.

MICCAI conference organizers should also coordinate with the MICCAI society on ethics issues such as: i) which individuals are currently barred from any role, and ii) alert the society to any apparent unethical behavior.

Stage 0: Call for PC members

The Society should maintain a database of past ACs and reviewers. Excellent ACs and reviewers should be identified after each event. The MICCAI 2017 organizing committee will build on the list provided by MICCAI 2016. MICCAI 2017 will use CMT to maintain this database. The information about the number of times a member has been an AC will be kept indefinitely. The information about excellence of reviewers or ACs will be maintained in the system.

MICCAI 2017 will also issue a call for participation in the PC. Individuals will submit relevant information regarding their past participations in MICCAI and other like conferences, as well as other biographical details.

Individuals will be chosen from the database, the received invitations and other sources, and invited to join the MICCAI 2017 PC (*cf.* Annex B). When they join, ACs will need to register to Researcher.cc, create their CMT profiles (or update it), and associate themselves as being either MIC, CAI or MICCAI. The MICCAI Program Chairs and Co-Chairs will then select the program committee, with the following guidelines:

- The PC composition should be representative of all MICCAI topics, and with a range of seniority;
- There will be 30 ACs initially recruited in this phase, balanced between MIC, CAI and MICCAI experts, with spread of expertise based on past MICCAI history.
- For MICCAI 2017, we will aim to have the best PC committee as possible while aiming for sex parity (50% male, 50% female).

A webinar will be held to explain the review process in detail to ACs and secure their commitment early in the process.

Stage 1: Reviewer database

The list of potential reviewers is based on the active reviewers on the last MICCAI conference, to which are added all first and last authors at that conference. Further, student reviewers must be at least enrolled at Ph.D. and have two or more published articles in a related field to qualify as reviewers. ACs will contribute to updating and expanding the list of existing reviewers.



Each potential reviewer will be invited to review for MICCAI (*cf.* Annex C). By accepting to review:

- the reviewers accept to review a maximum of 6 papers
- the reviewers will be asked to create or update their CMT and Researcher.cc profiles.

Stage 2: Intention to submit

Authors will provide an intention to submit two weeks prior to the paper submission deadline. Authors will have to provide: i) a list of co-authors and their affiliations, ii) Google scholar and DBPL profiles for each co-author where possible, iii) the title of the paper, and iv) the abstract of the paper. This information will be used to start building the assignment of papers to ACs and potential reviewers.

Stage 3: Paper submission

Authors will submit papers in CMT. The MICCAI Conference review process will be double-blind, i.e. the Area Chairs and reviewers won't know the authors, and the authors won't know the reviewers or Area Chairs. To achieve this, papers will have to be properly anonymized before submission. A paper will be rejected for an anonymization issue. The anonymization rules are detailed in Annex D.

Each paper will need to be submitted with at least one primary subject area and up to 3 secondary subject areas selected from the CMT system. The subject areas and the paper itself, will be used to generate suggested reviewers using an automated paper matching system embedded in the CMT system (see Stages 5, 6).

Stage 4: Additional AC's enrolment

The goal of this step is to complement the breadth and width of expertise required on the PC, in response to the submissions from authors. Given that it is near impossible to accurately predict which domains will be highlighted in any given edition, this step allows for the adjustment of the PC composition.

The Program Chair will therefore invite approximately 10-20 additional PC members from the database of potential ACs and reviewers. These individuals will need to be free from conflict and could be drawn from the larger community. Once they agree to join, they will need to update their CMT profiles and associate themselves as being either MIC, CAI or MICCAI, however, at this point the balance between these three groups will be proportional to the submissions.

A webinar will be held for all PC members to provide early statistics and explain the process once again in detail.

Stage 5: Paper allocation to ACs

Each paper will be assigned to an AC automatically by the CMT system, based on the subject area matching and the automated paper matching system. The Program Chairs will check the assignments to make sure that all papers received a reasonably good assignment.



The essential role of the AC is to carry the paper throughout the review process, up until decision. The AC will use his/her knowledge of the topic and of the appropriate reviewers to ensure the best (most informative) reviews.

For MICCAI 2017, 20 papers will be allocated to each AC. This is necessary to ensure a proper statistical distribution in the ranking to follow (*cf.* Stage 7). The number of ACs will be adjusted accordingly. Thus, for approximately 50 ACs, MICCAI 2017 is expecting to handle around 1,000 submitted papers.

Stage 6: Paper allocation to reviewers

The goal of the paper allocation is to find the most appropriate reviewers in terms of expertise for a given paper. This step is achieved in 2 phases using the CMT system:

In phase 1, the CMT system will provide a list of potential reviewers for each paper to the AC. This ordered list will be generated based on subject areas, Toronto Paper Matching System (TPMS), and other tools use by the computer vision community. Using their expertise and judgement, the AC will re-order this list as needed and can add additional reviewers to the list.

In phase 2, the CMT system will re-optimize matching of reviewers to papers based on a large weighting on the AC's suggested ranked list of reviewers (at least 6 reviewers on the list) and the TPMS scores. The optimization will take into account the ordered list from the AC, while load balancing across all papers, reviewers and ACs. The top three reviewers on the revised list will be sent the paper for review automatically. (Note that the reviewers remain blind to the paper authorship.)

This procedure has the following advantages over previous methods:

- Better matching of paper and reviewer; should yield better reviews
- Better conflict identification and resolution
- Reduced workload for AC
- The streamlined process saves a number of steps (reviewer acceptance, reassignment of papers), and thus saves time in the process.
- In line with other conferences, thus leveraging existing reviewer experience with CMT.
- Automated procedure with fixed dates ensures that procedure is more likely to stay on track
- Potential race condition for reviewers is avoided

The PC will ensure ACs have re-ordered reviewers on time, and can provide additional opinions if a borderline situation cannot be resolved by the AC PC members.

Stage 7: Review

The goal of the review step is to provide constructive criticism of a submitted paper.

The reviewers will:

- Provide a comprehensive, fair review (*cf.* Annex E)



- Provide a composite score; and
- Recommend papers for orals and awards

The AC will log in frequently and react to the reviewers' actions: remind reviewers to login and download the papers, and especially ask for a more detailed or fair review. *This is critical.* Should the AC be unsatisfied with the quality of a review, and failing to get further feedback from the reviewer, then the AC will be able to ask for additional reviewer(s) input on the paper, beyond the original three reviewers. Any reviewer that does not provide a quality review will be identified in the reviewer database.

For MICCAI 2017, we will run a “live fire” trial run of both stages 4 and 5 in the weeks preceding the final deadline for paper submission. We will use approximately 40 papers submitted ahead of the deadline for this purpose. They will be assigned to their AC, who will then assign reviewers, as per the instructions set forth above. The goal of this trial run is to iron out any bugs in the CMT – with approximately 160 users - while at the same time ensuring that all PC members are familiar with the process. While these will be real reviews, the papers will be kept accessible for the reviewer in order for them to change their reviews once the rest of the conference papers are completed.

Stage 8: Rebuttal process

The goal of the rebuttal process is to provide a way for authors to correct possible misinterpretations in the reviewer's findings, and inform the AC's recommendation for scoring:

- Reviews of the papers are sent to the authors.
- Authors have one (1) week to submit their rebuttal (*cf.* Annex F)
- Only the AC will read the rebuttal

Stage 9: Primary Scoring

The goal of this step is to provide a numerical score and rank for each paper assigned to the AC.

After rebuttals are entered, each AC will provide a summary score, justification, and recommendation for each assigned paper. The score need not be a numerical average of the reviewer's score, but all scores need to be justified.

Further, each AC will:

- select between 0-2 nominations for oral papers
- recommend papers for Student Awards
- recommend 2-3 Reviewer Awards

Stage 10: Acceptance process

The goal of the decision process is to establish the list of accepted papers.

Prior to this stage, the Program Chair will update the AC regarding the total number of orals and selected papers to be awarded at the conference, after consultation with the Organizing Committee and the MICCAI Board.



For MICCAI 2017, the acceptance rate is aimed at 35%.

The top 20% papers by ranking for each AC will be accepted:

- For 20 papers per AC, this represents 4 papers per AC
- For 1,000 submissions, with 50 PC members, this represent a maximum of 200 papers

The bottom 50% papers by ranking for each AC will be triaged (i.e. rejected):

- For 1,000 submissions, with 50 ACs in the Program Committee, this represent a maximum of 500 papers

For MICCAI 2017, the next step will be to select 15% of all submitted papers, from the remaining 30% of all submitted papers in the “grey area” (i.e., select one out of two remaining articles). Each AC will be assigned the remaining set of 6 papers from another AC, emerging from the first round (i.e. initial 20 minus the top 20% and bottom 50%). This assignment of borderline papers will be made by the Program Chairs. ACs will be asked to read the papers, the reviews and the rebuttal, and confirm or adjust the ranking of the original AC. Following this new ranking, the top 3 articles per set will be selected. For 1,000 submissions and 50 ACs, this represent 150 papers.

Stage 11: Oral decision process (1 week)

The goal of this step is to select the best submitted papers that justify an oral presentation.

Prior to this stage, the Program Chair will update the ACs of the number of orals at the conference. This will be determined by the Organizing Committee, in consultation with the MICCAI Board.

For MICCAI 2017 the number of orals is currently set at approximately 35. Of this number, the Organizing Committee reserves the right to identify the theme and composition of up to 4 oral sessions out of a total of 10 (*cf.* Annex G). Moreover, there will minimally be 1 CAI oral session.

Three teleconferences will be held to discuss MIC, CAI and MICCAI oral recommendations respectively. The process will identify an ordered list of orals that will be finalized at the in-person PC meeting.

Stage 12: Official notification to authors

The goal of this step is to inform authors about the complete review process. The Program Chair will issue the following, via email, to all authors:

- Complete statistics for the process (ACs, nb of submissions, nb of reviewers, nb of reviews, nb of accepted, nb of orals); and
- The author’s acceptance (oral, poster) or rejection status for their paper.

A complete list of acceptance and orals will then be drafted for dissemination as a program.

The Program Chair will record each complaint and follow up.