

Information Theory Society Awards Committee Report by Andrea Goldsmith

*IT Society BOG Meeting
July 6, 2008
ISIT, Toronto, CA*

Committee Chair: Andrea Goldsmith (First VP, Ex-Officio)

Committee Members: Frank Kschischang (2nd VP, Ex-Officio), Ning Cai, Robert Calderbank, Anne Canteaut, Suhas Diggavi, Tuvi Etzion, Michael Honig, Ioannis Kontoyiannis, Upamanyu Madhow, Andreas Winter

Paper Awards:

The awards committee has three paper awards to bestow on the most deserving paper(s). They are

- The IT paper award (papers published in the IT Transactions in 2006 and 2007 are eligible.)
- The joint IT/Comsoc paper award (papers published in any IT or Comsoc journal in 2007 are eligible.)
- The ISIT 2008 student paper award (papers accepted to ISIT'08 with a student as main contributor are eligible)

In addition, this year the committee actively solicited nominations for the IEEE Fink prize paper award (which is made directly by nominees), and is working to reinstitute the IEEE Baker Prize Paper award. More details on the status of these paper awards are below.

Summary of Current Paper Award Status:

The winner of the joint IT/Comsoc paper has been decided. A separate report was sent to the BoG with the committee's recommendation for the IT paper award as well as a discussion of the recommendation and the runner-up papers (a few BoG members did not receive this report since their paper was nominated for the award); the BoG will vote on the committee's recommendation at the ISIT meeting. The committee has selected the ISIT student paper award finalists, and their presentations will be judged during ISIT, with a final decision made in advance of the banquet so it can be announced there.

Joint IT/Comsoc Paper Award:

This award is decided jointly with Comsoc. The procedure is for both societies to submit 1-2 finalists and appoint a subcommittee of two members from each society to select the final 1-2 winners. The deadline for final selection was May 15 so that the award could be announced at ICC and the winners could collect the award there if desired or, alternatively, at ISIT.

The IT committee received 6 nominations from the open call for nominations. The nominations were in response to the open call for nominations, which was posted on the society website, advertised in the newsletter, and sent to the BoG mailing list and the IT AEs. This is a significant improvement over the number of nominations in prior years, and this aggressive solicitation of nominations should be continued in the future. The

committee members were also solicited for additional nominations, but none were suggested. An initial vote was taken to shorten the list of papers for consideration. These papers were then discussed at length via email. The committee selected a finalist paper based on a second vote following the email discussions. The selected paper was

Title: Hierarchical Cooperation Achieves Optimal Capacity Scaling in Ad Hoc Networks
Authors: Ayfer Özgür, Olivier Lévêque, and David Tse
Appeared: *IEEE Trans. Information Theory*, Vol. 53, No. 10, Oct. 2007.

The Communication Society Award committee nominated the paper

Title: Accumulate-Repeat-Accumulate Codes
Authors: Aliazam Abbasfar, Dariush Divsalar and Kung Yao
Appeared: *IEEE Trans. on Commun.*, Vol. 55, No. 4, April 2007.

The papers were forwarded to a subcommittee, consisting of two members each from the IT and Communications Society awards committees, whose assigned task was to determine the winner. The subcommittee members were appointed by the respective awards committee chairs, and consisted of Frank Kschischang, Michael Honig, Reinaldo Valenzuela, and Ray Pickoltz (chair).

A conference call was arranged to discuss the two papers, and to vote on the outcome. This was followed by extensive email discussions leading to the award decision, which was supported by all committee members. The paper selected for the award was “Accumulate-Repeat-Accumulate Codes” by Abbasfar, Divsalar, and Yao. The authors were informed and an announcement made on the Comsoc and IT websites, as well as at ICC. The award will also be announced at ISIT.

Several issues arose in the context of the joint paper award that requires BoG input, as follows:

- Cross-nominations and dual awards: In the course of the committee deliberations, the issue of cross-nominating papers from the joint award nominees to the IT paper award nominees, and vice versa, was discussed. Whether or not a single paper should be eligible to win both awards in a single year was also discussed. The bylaws do not currently include anything about the joint award, so there is no formal procedure to draw from for answers to these questions (the joint award is described in the Comsoc bylaws, and some of our procedures that involve coordination with Comsoc obviously must match their bylaws). Since we did not want to change the rules associated with the award during deliberations, the committee decided to discuss at the ISIT BOG meeting how the joint award should be described in the bylaws, including the procedure for cross-nominating and dual awards for the same paper. The committee will draft the description of the award for the bylaws following this discussion (which will be voted on at Allerton).
- Decision Timing: Meeting the May 15 deadline for the award was fairly tight, and the authors of the winning paper were not able to make arrangements to attend

- ICC in time to receive the award there (in part because it was in Beijing). This was the first year that the award decision was made before ISIT, and the push to decide before May 15 was from Comsoc. Some have suggested that we try to convince Comsoc to relax this deadline to make the decision after May 15, either before ISIT or even afterwards. However, in order to accommodate Comsoc's desire to announce all paper awards at ICC and have the decision made in parallel with the IT paper award and in advance of ISIT, it seems that meeting the May 15 deadline should be preserved in the bylaws.
- Subcommittee Size: The subcommittee size of four was agreed upon when the joint award was created. One subcommittee member this year felt that it might improve the procedure to have a larger subcommittee decide on the outcome, since four members may not be sufficient to provide a balanced view. Of course, there is a tradeoff in increasing the size (the more members the more difficult it may be to build a consensus), but I tend to think that 4 is too small. Again, my own opinion -- others may disagree...
 - Window for Award Consideration: Comsoc paper awards all have a one year window, i.e. awards are given for papers published the previous calendar year. The IT award is given for papers published within the previous two calendar years. The Comsoc Award committee chair Steve Weinstein was approached to consider extending the joint award consideration from the current one year window to two years. Steve did not find much support for this within his committee. Is it worth pursuing further? It would probably be quite difficult to convince Comsoc to extend the window.

ISIT Student Paper Award Finalists

The committee is responsible for selecting the ISIT student paper award finalists, judging the presentations of these finalist papers, and selecting the winner(s) based on the paper and presentation quality. This is the second year of the award, and the first time it has been handled by the awards committee (last year it was handled by the TPC). There was some discussion about the possible conflict of interest for the TPC if they had any input into the award finalist selection and had eligible papers on which they were co-authors. To resolve this issue it was decided that the awards committee alone would select the finalists. This was somewhat problematic since the committee was not able to easily access or sort the information about the eligible student papers, and received little input on the best papers to consider from the TPC. The process can be improved to address these issues, as described in more detail below.

The awards committee sorted the spreadsheet generated by the ISIT TPC co-chairs based on overall review score. The committee members were then asked to select 2-4 papers from this list as finalists for the award. Based on this first sorting and some additional discussion, five papers emerged as the finalists for the award.

The finalists for the ISIT 2008 student paper award are:

“New bounds on the information-theoretic key agreement of multiple terminals” by A.A. Gohari and V. Anantharam

“Linear programming bounds for unitary space time codes” by J. Creignou and H. Diet

“Exchange of Limits: Why Iterative Decoding Works” by S. B. Korada and R. Urbanke

“A New Channel Coding Achievability Bound” by Y. Polyanskiy, H.V. Poor, and S. Verdú

“Communication Requirements for Generating Correlated Random Variables” by P. Cuff

These papers will be presented at ISIT, and the TPC chairs scheduled them to appear before Thursday lunch, so an award winner could be picked before the banquet and announced there. Three committee members and the chair will attend each presentation and score it. The paper by Gohari and Anantharam could not be presented by Gohari at ISIT due to visa issues. Instead, Gohari generated a videotape of his presentation, which was sent along with his slides to the committee for judging. The committee will meet after the last talk on Thursday to select the winner(s), which will be announced at the banquet.

The 2007 ISIT student paper award winners will be presented with their certificate and plaque at the 2008 awards lunch. The question of the appropriate manner for recognizing the non-student authors on the award-winning papers arose. It was decided that the awards lunch brochure should list all authors with short bios, but only the student authors should come up to the podium to receive the award. After the award is presented, a group photo with all authors will be taken.

Several issues arose in the context of the student paper award that should be addressed to improve the process for subsequent years.

- COI: The TPC chairs were concerned about the appearance of a COI if their papers were eligible for the award. This was resolved by putting all responsibility for selecting the award winners with the awards committee, so that all TPC chair and member papers could be eligible.
- Eligibility: There was some question as to whether papers by non-student authors who submitted papers based on their thesis work should be eligible. This seemed to dilute the purpose of the award and would likely create confusion and room for interpretation about eligibility. It seems the current criterion that an author must be a registered student at the time of paper submission is clear and unambiguous, and thus should be maintained.
- TPC and Reviewer Recommendations: It would have been helpful for the committee to get more recommendations from the TPC chairs, members, and/or reviewers in terms of which papers to consider as finalists. Only 2 reviewers marked the box on the review form that the paper should be considered for a best student paper, and apparently there was not much emphasis on generating nominations during the review process. Ideally the TPC should generate 5-10 nominations internally, since they are in the best position to judge the papers. Our

committee recommends that more effort be made to generate nominations for finalists within the TPC.

- Information Exchange: The format of information the committee received about the student papers was very difficult to work with, which made it challenging to sort and select the finalists. The awards committee was first forwarded all eligible papers and their reviews in a 2000 page document generated by the TPC. Since this document was very difficult to parse to obtain finalists, a spreadsheet was requested just listing the key facts about each paper and their review scores and reviewer comments. Even with the spreadsheet, it was difficult to pick 5-10 finalists of the 200 eligible papers from the spreadsheet. In terms of providing the committee with information so they can make nominations for finalists, the simplest mechanism would be for the awards committee to have access to student paper information on the TPC website, perhaps with the names of the reviewers and any other sensitive and unnecessary information deleted, so that the committee could sort and look up papers and reviews in the manner it felt was most appropriate. If this is not possible, then the TPC chairs should provide the committee with a spreadsheet with all the data on the student paper presentations that has a simple format and easy sorting mechanism. The spreadsheet that our committee was sent was not easy to parse, and perhaps a template could be developed for this purpose and provided to ISIT TPCs going forward.

IT Paper Award:

The committee received a total of 15 nominations for 10 papers from the publications committee. One additional paper was nominated internally for a total of 11 papers to consider for the award. In our first round of deliberations, each committee member selected 2-4 papers as the strongest contenders based on the nominations and their own reading of the papers. From this emerged a consensus for narrowing the set of papers under consideration to four papers. After a week of extensive discussion by email of the 4 finalist papers, another vote was taken. This vote was followed by more discussion and another vote. After this vote the committee was unanimous in its recommendation for the award. A report describing the committee's recommendation and the reason for it, as well as a discussion of the procedures followed and the runner-up papers, was sent to the BoG three weeks in advance of ISIT. The BoG will vote on the committee's recommendation at that time.

One procedural issue has arisen with respect to IT paper award nominations. According to the Bylaws, the nomination procedure is as follows:

By March 15, the chair of the Publications Committee or designee shall forward to the First Vice President a list of at least nine articles, published in the previous calendar year, for the consideration of the Awards Committee. Each nomination shall be accompanied by a statement outlining the contribution of the paper.

The Awards Committee shall take into account (a) all nominations submitted in response

to the open call for nominations in the last two years; (b) the nominations supplied by the Publications Committee in the last two years; (c) any nomination that its members may want to submit for consideration.

The Bylaws thus seem to indicate that the publications committee, i.e. IT editors + the newsletter editor, seem *obligated* by the bylaws to generate nominations *separate* from those that are obtained from the open call. However, the practice in the society, as confirmed by Ezio and the former EIC Vince Poor, is that most if not all nominations are generated by the open call, which are sent to the EIC and then forwarded to the awards committee chair. There has not been a separate list of nominations generated by the publications committee during either Vince's or Ezio's tenure.

This discrepancy between the Bylaws and practice raises several questions. First, should the publications committee be obligated to generate a list of nominations independent of those generated from the open call. In addition, with this reading of the bylaws it's not clear why the nominations from the open call should go to the EIC (as pubs chair) and not to the awards committee chair directly. These issues will be raised at the BoG meeting, with perhaps some discussion on amending the bylaws to be approved at ISIT.

Sunsetting of the Baker Prize

The IEEE decided recently to discontinue the Baker prize, described as follows:

The IEEE W.R.G. Baker Prize Award was established in 1956 and is presented by the IEEE Board of Directors for the most outstanding paper, reporting original work, in the Transactions, Journals and Magazines of the IEEE Societies, or in the Proceedings of the IEEE, issued between 1 January and 31 December of the preceding year. It is administered through the IEEE Prize Papers/Scholarship Awards Committee of the IEEE Awards Board.

Dave Forney proposed a measure to reinstate the Baker prize at the IEEE TAB meeting in February. This proposal was presented to the IEEE Awards Board a week later by Dave Hodges and Michael Deering. The Awards Board passed a motion reiterating its earlier action to recommend to the Board of Directors that the Baker Prize be terminated, and this proposal will appear on the BoD agenda for the June Board series. The stated reason for rejection was that the Awards Board believes that it will be too difficult to define and apply appropriate criteria for selection of a single best paper from all of IEEE's publications. Dave and Andrea Goldsmith then attempted to get the support from other IEEE societies to reinstate the award by emphasizing its importance and the fact that criteria could be established despite the broad nature of the award. The idea was that participating societies would provide members for the Baker prize awards committee as well as funding for the award. Discussions with other societies were at first discouraging. However, at the IEEE TAB meeting in June, Andrea had some discussion with David Hodges (IEEE Awards Committee Vice-Chair), who was enthusiastic about the changes for reinstatement if at least 3-4 societies from diverse areas within the IEEE would co-sponsor the award and play a role in selecting the winner. Following this conversation Andrea approached several society presidents about joining forces to reinstate the award,

and they were all generally very enthusiastic. The societies expressing interest in co-sponsoring the award included Comsoc, Signal Processing, Circuits, Control, Computational Intelligence, Computer Science, and Vehicular Technology. The general areas of agreement regarding the award among these societies were as follows:

- Make the award focused on theory contributions, broadly interpreted, across many societies. This will provide some focus for the award and make it easier for a committee across these different societies to judge all nominated papers.
- Papers published within past 5 years will be considered.
- Each co-sponsoring society will provide a member for the selection committee and to help solicit nominations
- Each co-sponsoring society will contribute sufficient funds to endow the award in perpetuity (~100K). If the IEEE would prefer a shorter duration (5-10 years) as a test period, then that amount of money will be solicited.

Next steps:

- Andrea will follow up with all interested societies to coordinate next steps
- SP will generate the IEEE template for the award and the cover letter, to be submitted to the awards board.
- The Baker family will be consulted to make sure they support the changes, as the award will continue to carry the Baker name
- The proposed will be made to the awards board before September, since David Hodges' term ends this year and he is highly supportive of the reinstatement.

Fink Award:

The Fink award is a paper award for tutorial papers published in any IEEE journal, and the awards committee for selecting this award is administered through the IEEE. While the IT Transactions does not generally publish tutorial papers, many of our members publish tutorials in other journals, and these tutorials tend to be highly cited and of very high quality. Several people that have served on the Fink Award Committee have said they do not get many high-quality nominations. Thus, the awards committee this year was proactive in soliciting nominations for the Fink Award. A call for nominations was published in the IT newsletter, on the IT website, and in an email sent to the BoG and publications committee. Nominations can be uploaded directly by any individual through the IEEE website www.ieee.org/portal/pages/about/awards. Societies can also nominate a paper for the award. While there was not sufficient consensus in the committee to nominate a paper on behalf of the society, at least 3 nominations from individuals were generated via our proactive soliciting of nominations for this award.

BBVA Award:

The BBVA Foundation Frontiers of Knowledge Award is a new award in its first year that is sponsored by the BBVA Foundation of Spain. The purpose of the award, is “to recognize the role played by scientific research in these early years of the 21st century in pushing back the boundaries of knowledge and putting it to work for the benefit of all

society.” More details about the award and the nomination process can be found at the website <https://w3.grupobbva.com/TLFU/premios/fronteras/en/index.html>. There are eight categories for the award in the arts and sciences, including the area of Information and Communication Technologies. The BBVA Foundation together with the Spanish Council for Scientific Research (CSIC) appoints a technical evaluation committee for each category of the award. Awards in each category will consist of €400,000 prize money, a diploma and a commemorative artwork.

This award was brought to the attention of the society executives, and it was suggested that the society select and nominate one of its senior and prominent members for the award. At first the awards committee was given this task, but the committee was quite busy with the paper awards and the committee chair felt that the society officers, Shannon Award committee members, and other senior society members should weigh in on the decision of who to nominate for the award. Eventually the society officers and a few senior members were consulted, and a consensus to nominate Jacob Ziv for the award emerged. The awards committee chair Andrea Goldsmith put together the nomination with the help of Wojciech Szpankowski and Sergio Verdu, and the nomination was submitted by President Dave Forney on behalf of the society.

Other Issues:

- Proactive Solicitation of Nominations: In past years there has been a dearth of nominations for the joint IT/Comsoc paper award, and sometimes for the IT paper award as well. To address this issue, the deadline for nominations for both awards was pushed back by a month, to March 1. In addition, nominations were broadly solicited through the newsletter, IT website, publications committee, and BoG mailing list for both the IT and Joint IT/Comsoc paper award as well as for the Fink award. The impact of this proactive solicitation was apparent in the large number of nominations we received for all these awards. The committee recommends that this proactive solicitation of nominations be continued.
- Awards Committee Responsibilities: The purview of the awards committee has grown substantially in recent years. Until the past few years, the awards committee’s only responsibility was selected the IT paper award winner. Starting in 2002, this committee was also responsible for selecting a finalist for the IT/Comsoc joint paper award and forming a subcommittee with Comsoc to select the final winner. This year selecting the student paper award winner(s) was added to the purview of the awards committee. Since these decisions must be made from the award nomination and ISIT paper decision deadlines (around March 1 in both cases), the committee’s workload is quite large. If other responsibilities (such as picking the BBVA nominee or perhaps deciding on Distinguished Lecturers) are added, the committee will be quite overwhelmed. It might be worth considering having two awards committees, one focused on paper awards, and the other on any additional awards-related committee work.