

ArXiv: Questions and Answers

Q: What is ArXiv?

A: ArXiv is a public preprint server (at arXiv.org) which was set up more than 10 years ago at Los Alamos to serve the physics community. It has since moved to Cornell, and has expanded to cover large parts of mathematics and computer science. ArXiv is partially funded by the National Science Foundation (NSF). The computer science part is also known as the Computing Research Repository (CoRR), and is sponsored in part by the Association for Computing Machinery (ACM). Recently a subcategory (`cs.IT`) has been set up to cover information theory, and a synonymous math subcategory (`math.IT`) is planned. (There are no engineering categories currently on ArXiv.)

Q: What is the IT Society policy toward ArXiv?

A: At its October 2004 meeting, the Information Theory Society Board of Governors unanimously adopted a policy encouraging IT authors to post **preprints only** on ArXiv. The report upon which this vote was based is attached.

Q: Why should I post my preprints on ArXiv?

A: In the communities in which it has been widely adopted, ArXiv serves as the primary mechanism for rapid and broad communication of new research results. All anecdotal evidence indicates that it has been a tremendous stimulus to research and collaboration.

Q: When should I post my preprints on ArXiv?

A: Posting is entirely at the option of the author. However, authors often post preprints when they make a submission to a journal or to a conference, or when they would normally post them on their own Web page.

Q: How do I post my preprints on ArXiv?

A: There are clear instructions at arXiv.org/help or arXiv.org/corr. The preferred format is \LaTeX . All material in the article, including figures and bibliography, must be included. If the article has been submitted to a journal or to a conference, then you should so indicate.

Q: Why can't I submit a .pdf file? I don't want people looking at my \LaTeX source.

A: ArXiv has adopted this policy so that they will be able to distribute material in all common present and future formats. You'll have to clean up your \LaTeX source files.

Q: Can I update a posting?

A: Yes. However, the original posting remains, with a time stamp.

Q: What do I do when my article is published?

A: You should update your posting by adding the bibliographic reference to the published journal or conference paper and the Digital Object Identifier (DOI) number. Clicking on the DOI number takes readers directly to the appropriate page on IEEE Xplore (or other publisher's Web site), from which they can download the published article.

Q: Why not just update my posting with the published article?

A: The income of the IT Society is based in part on the number of downloads of IT Transactions articles from IEEE Xplore. The Society therefore wants members who have access to IEEE Xplore to download IT Transactions articles from that source. This policy attempts to balance the interests of members in rapid and broad dissemination of research results with the financial health of the IT Society.

Q: Is this policy OK with the IEEE?

A: For some time the IEEE has explicitly permitted authors to post preprints and IEEE-published articles on their own Web pages, or on institutional servers. However, the IEEE has not yet formulated a policy toward public preprint servers such as ArXiv. It appears that the IT Society is the first IEEE society to address this issue. The IT Society has been in informal contact with the IEEE Publications Board, who are agreeable to seeing this policy go forward as an experiment. The IEEE may take the results of this experiment into account in formulating a future IEEE-wide policy.

Q: How about copyright?

A: The author retains copyright to preprints posted on ArXiv. The IEEE retains copyright to IEEE-published articles.

Q: Is there any quality control on ArXiv?

A: It has not proved necessary so far to restrict access to ArXiv. Each subcategory has a moderator (Madhu Sudan for `cs.IT`, Joachim Rosenthal for `math.IT`), who has the power to delete unsuitable postings. There is also a mechanism to register authors, which has not been implemented yet for the IT subcategories.

Q: How do I subscribe to ArXiv?

A: You may subscribe by sending an e-mail message to `cs@arXiv.org` with “subscribe [your name]” as the subject line and “add IT” as the text. You will then receive daily messages with all postings to the IT subcategory. If the volume of IT articles becomes as substantial as we hope, then the moderators may create mailing lists for sub-subcategories.

Report of the Ad Hoc ArXiv Study Committee to the Board of Governors of the IEEE Information Theory Society

Dave Forney (Chair), Ralf Koetter, Vince Poor, Alex Vardy, Han Vinck

Summary

As reported at the June Board of Governors meeting, an information theory (IT) category has recently been set up on the public preprint server ArXiv (arxiv.org). This committee was created to recommend whether the IT Society should take any steps to endorse and actively promote the posting of IT papers on ArXiv.

We recommend unanimously that the IT Society should endorse and actively promote the posting of **preprints only** on ArXiv. IT Society policy should be that when the IEEE-published paper becomes available, authors should update their ArXiv posting with its bibliographic reference and Digital Object Identifier (DOI) number, which will provide an immediate link to the IEEE-published paper on IEEE Xplore.

We further recommend steps to encourage wide adoption of ArXiv in the IT community.

Background

ArXiv is a public preprint server which was set up more than 10 years ago at Los Alamos to serve the physics community. Subsequently it has become an NSF-funded facility at Cornell, and has expanded to cover wide areas of mathematics and computer science. All anecdotal reports indicate that it has become a valued service to research wherever it has been widely adopted.

Posting of preprints on ArXiv is completely at the option of the author. The preferred format is L^AT_EX. Most commonly, preprints are posted when they are submitted for publication. Once posted, preprints are time-stamped and archived in perpetuity, although updates and revisions may be appended subsequently. Daily announcements are made of new postings. Papers may be freely downloaded from ArXiv in various formats, and various bibliographic tools are available.

Many IT authors have already posted papers on ArXiv in various existing categories in math, computer science, and physics. Recently an IT category (`cs.it` and `math.it`; they are synonymous) has been established, whose scope is basically the same as that of the IEEE TRANSACTIONS ON INFORMATION THEORY. The moderators are Joachim Rosenthal and Madhu Sudan. An announcement of this new category has been made in the IT Society Newsletter. Authors are currently free to post papers in this category as they like.

The charge to our committee has been to address the question of whether the IT Society should endorse and actively promote the use of the IT category on ArXiv. The primary reason to do so is that the benefits of ArXiv are much greater when the routine posting of new papers becomes part of the culture of a research community. The primary concerns have been the possible risks to our publication income, and/or possible conflict with IEEE policies.

IEEE policy and financial considerations

The IEEE, like every other professional society and publisher, is concerned about the impact of electronic publication. It has to balance member benefits against possible financial impact.

Preprint posting is just one aspect of the electronic publishing revolution. The IEEE has for many years explicitly permitted posting of both preprints and IEEE-published articles on personal and institutional servers. However, it appears that the IEEE has not yet really grappled with a policy for public preprint servers such as ArXiv. (For the current version of the IEEE policy on electronic information dissemination, see the IEEE Web site.)

Other societies have adopted various policies toward electronic preprint servers such as ArXiv. The professional societies in physics and math generally support ArXiv, and seem to be successfully coexisting with it. Some journals, such as the ANNALS OF THE INSTITUTE FOR MATHEMATICAL STATISTICS, have even decided to post all of their published articles on ArXiv. On the other hand, some societies are vigorously opposed, and some journals, such as SCIENCE, will not accept papers that have previously been posted anywhere.

When a paper is finally accepted and published, IEEE policy asks authors to replace a posted preprint with either a link to the IEEE-published paper or with the IEEE-published paper itself. However, on ArXiv it is not possible to remove a posted preprint (although it can be updated), and we do not believe that it is in the IEEE's (or the IT Society's) best financial interest to have the IEEE-published paper freely available via ArXiv.

Neither we nor the IEEE has any way of estimating the financial impact of routine use of public preprint servers such as ArXiv. One might expect that in the future the primary value offered by the IEEE and other publishers will be easy access to an orderly, peer-reviewed, and quality-controlled literature. Academic and corporate libraries cannot rely on authors for this, and therefore may be expected to continue to subscribe to publishers' services such as IEEE Xplore.

Recommendation

We recommend that the IT Society endorse and actively promote the use of ArXiv as a potentially important service to the IT community. However, we recommend that the IT Society should promulgate a **preprints only** policy for the use of ArXiv. Authors should preferably post preprints at the time of submission to the IT Transactions or to a conference. Authors should maintain a clear distinction between preprints and IEEE-published papers; *e.g.*, a single-column format is recommended for preprints. When a paper is published, the author should add the bibliographic reference and a link to IEEE Xplore via the DOI number; this may actually stimulate downloading from IEEE Xplore. We believe that this policy will maximize the benefits of early dissemination of new research results, while minimizing the risk of reduced society income due to fewer downloads of IEEE-published papers.

We are communicating this proposal to the IEEE staff and Publications Board, but believe that it will be some time before they can definitively address policy toward public preprint servers such as ArXiv. Meanwhile, we believe that the IT Society's adoption of this policy may serve as a useful "trial balloon" for the IEEE as a whole.

Active promotion

We further recommend the following steps to generate a critical mass of use of ArXiv:

1. A series of promotional articles in the IT Newsletter.
2. Demonstrations, literature and advocacy at IT workshops and symposia.
3. Work with ArXiv moderators to create interest groups and mailing lists.
4. Ask key IT members, such as BoG members and Associate Editors, to post all of their personal current preprints on ArXiv.
5. Ask IT authors who have posted papers in other categories to cross-list them on `cs.it/math.it`.
6. Suggest (but not require) that authors post preprints on ArXiv when they submit papers to the IT Transactions or to IT conferences.

Respectfully submitted,

Ad Hoc ArXiv Study Committee