



Graduate Student Blog

by and for math graduate students



The AMS Graduate Student Blog, by and for math graduate students, includes crossword puzzles, and a variety of interesting columns and excerpts. This month's blog section offers the following excerpts from blogs.ams.org/mathgradblog.

My Solution to a Panicked Classroom

By Sarah Salmon, University of Colorado, Boulder

... Things I did not anticipate: their extremely narrow zone between boredom and anxiety.

Online Recommender Systems—How Does a Website Know What I Want?

By Stephanie Blanda, Penn State

... how do the sites come up with these recommendations? Sometimes they seem very far off (why should I become friends with someone when we only have one mutual friend?) to eerily tailored (how did you know my favorite band!?!?)

... There are two main ways that recommender systems produce a list of recommendations for a user—collaborative or content-based filtering. Collaborative filtering [as used by Amazon and Facebook] uses past behavior... and similar decisions made by other users to create a model. ... Content-based filtering uses a series of discrete characteristics of an item in order to recommend additional items with similar properties.

... Collaborative filtering suffers from three main problems:

- Cold Start: Collaborative filtering systems must build a profile for each user...
- Scalability: Collaborative filtering systems are used in areas where there are lots of choices. For example, with Amazon there are millions of products from which to choose. A large amount of computational power is often needed to calculate recommendations.
- Sparsity: Again, thinking about Amazon, there are millions of products available... This means that a particular item will have very few ratings.

Bridging the Gap 2: Eine Kleine Nacht Mathematics

By Brian Katz, Texas Austin; Augustana College

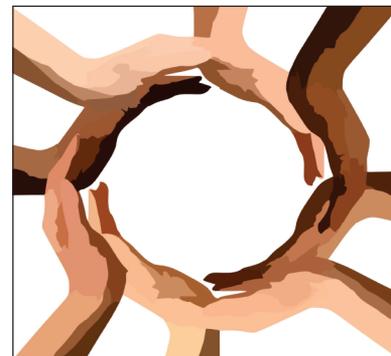
... In this post, you will find a sequence of interesting math talks that have been extended by further literature research by graduating seniors for your continued edification.

On Our Path toward a More Diverse Mathematical Community

By Alexander Diaz-Lopez, University of Notre Dame

As informed by the AMS Report on the 2012-2013 New Doctoral Recipients, only 6 percent of mathematics PhD degrees conferred to US citizens in 2013 were given to Hispanics, African-Americans, American-Indians and Native Hawaiian. Women accounted for 27 percent. ... As graduate students, what can we do to help improve and promote diversity in mathematics?

1. First and foremost, you have to **do well in your program**.
2. **Go to conferences, seminars, colloquia, etc. ...**
3. **Find a mentor**, in fact find several mentors. A mentor could be a professor from your undergraduate institution, a professor from your current institution, a former adviser of yours or simply someone you met at a conference/seminar and kept in touch with. These mentors will advise you throughout your career, write letters for you (recommendation letters are usually very important!), and inform you of opportunities you may otherwise not be looking for. The SACNAS, USTARS, and Blackwell-Tapia conferences are great for such purposes (and so are many others). If you decide to organize programs/workshops/conferences (especially targeted towards improving underrepresentation in mathematics), these mentors will be your main source of help and advice.



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4. **Get involved locally**. Most universities have several student organizations. Join any (or all) math organizations. Also look for organizations representing minority students. These organizations often run seminars, conferences and events in which topics regarding diversity

in mathematics are discussed. Also, often hearing other success stories from some of your peers will motivate you.

It is important to understand that as a graduate student your main purpose is to do well and obtain your PhD. However, you can start creating connections and getting the necessary experience to then be successful at your efforts towards a more diverse mathematical community.

Culture Analytics at IPAM

The digital footprints that people leave behind when they access the Internet or social media offer a treasure trove of cultural information. IPAM's upcoming program on Culture Analytics will explore the mathematical opportunities and challenges that have emerged as a result. Scholars in the social sciences and humanities as well as mathematics, engineering, and computer science are invited to participate in workshops at IPAM March 7-June 10, 2016.

For more information, go to ipam.ucla.edu/ca2016.



A close-up of the visualization of 50,000 Instagram images shared in Bangkok. Artists: Nadav Hochman, Lev Manovich, Jay Chow. Used with permission.



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