

Academic Service Statement

Hemanshu Kaul
email: kaul@math.iit.edu

The academic community consists of a wide variety of people and institutions ranging from the local research group, the department, the home institution, to professional organizations, together with fellow academicians and students within these institutions. Throughout my time at IIT, I have consistently contributed to all parts of the academic community and helped to build the communal aspects of an intellectual life dedicated to learning, research and teaching.

In the Professional Community

I have organized multiple conferences to promote discourse in discrete mathematics, with participants ranging from topmost researchers to postdocs and students. One year after joining IIT, I co-organized, with M. Pelsmajer (IIT), a special session on Graph Theory in the AMS Central Section Meeting at DePaul University, Chicago in October 2007, with 18 invited speakers from all over the US. In April 2008, I co-organized, with J. Balogh (UIUC) and T. Jiang (Miami-Ohio), a special Session on Graph Theory in the AMS Central Section Meeting at Indiana University, Bloomington, with 22 speakers from all over the country. This was followed, in November 2008, by co-hosting the 47th Midwest Graph Theory Conference (MIGHTY) at IIT. Despite its name, this conference is held all over the US, from Las Vegas in the west to Rochester in the east to Charleston in the south. This edition of the conference, co-organized with M. Pelsmajer and R. Ellis (IIT) and M. Schaefer (DePaul), was one of the largest ever with over 65 participants including 40 speakers from US and Canada. In November 2010, I co-organized, with D. Galvin (Notre Dame), a special Session on Graphs and Hypergraphs in the AMS Central Section Meeting at Notre Dame University. We had 22 speakers from all over the country. You can find more details about these conferences on my webpage. These conferences have helped publicize the work and interests of the discrete math research group at IIT as an active venue for current research in discrete math. This is particularly important given the young age of our research group and of our department.

In 2007-08, I was selected as an AMS Project NExT fellow. Throughout the year, I interacted with both young and old faculty from around the country as we discussed the various aspects of professional life of a mathematician in order to become a better teacher and researcher. As my formal contribution to this wide-ranging discussion, I helped organize a panel discussion with four experienced researchers and administrators on ‘Early Career Grants: possible sources and proposal writing’ at the Joint Mathematics Meeting, San Diego in January 2008.

In 2009, I was nominated to the Mathematical Association of America’s National Committee on Minority Participation in Mathematics for the term of 2009-2012. This committee strategizes on both long-term and short-term plans to improve the number of minority students (and consequently, minority teachers and researchers) in the mathematical sciences. These discussions on minority education in the US have been an enlightening experience for me as an immigrant and given me a better insight into the issues.

As most other active researchers, I also regularly referee papers for journals in Combinatorics, Graph Theory, and Operations Research, including *Ars Combinatoria*, *Complexity*, *Discrete Mathematics* (multiple papers), *Journal of Combinatorial Mathematics* and *Combinatorial Computing*, *Naval Research Logistics* (multiple papers), *SIAM Journal on Discrete Mathematics* (multiple papers), *Operations Research*. I average about 4 paper reviews per year. I am also an associate editor for the *European Journal of Pure and Applied Mathematics* (whose editorial

board includes many well-known mathematicians and physicists from around the world) since 2007. As an editor, I assist in papers related to Operations Research and Discrete Math.

Within the University

At IIT, I have been a member of the University Library Committee since 2007. I also participated in the Mathematics General Education Committee in 2009.

I was the main organizer of the department colloquium in 2008-09. There were a total of 36 speakers, including a majority from outside IIT, over the two semesters, with particular attention given to maintaining a variety of research areas. I also advertised the relevant talks outside the department to drive up the number of attendees and invited speakers from other departments to encourage inter-disciplinary exchange of ideas within IIT.

Along the same theme of building interdisciplinary research relations with members of the IIT faculty, in 2009, I took the initiative to organize, with my colleagues M. Pelsmajer and R. Ellis, a pan-IIT Interdisciplinary Seminar Series on "Networks and Optimization" which provided a forum for researchers in ECE, Civil Engineering, Computer Science, and Applied Math, to build joint research programs. This seminar directly led to many new interdisciplinary projects including some of my projects. As a member, I have also been a part of research and grant proposals with faculty from the Wireless Network and Communications Research Center (involving faculty from ECE and CS departments).

I was the organizer of the Discrete Mathematics Research Seminar in 2007-08 and in 2010-2011. These seminar series gave an opportunity to researchers in our department to hear about the current research being done in other departments, especially Computer Science, at IIT and in other Chicago area universities like DePaul, UIC, etc., on topics of common interest, and an opportunity for students at IIT to be exposed to research problems. For an even more in-depth study of advanced topics like graph minor theory, combinatorial set theory, discrete geometry, topological methods in graph theory, that are not covered in typical courses, I co-organized, with M. Pelsmajer (IIT) and M. Schaefer (DePaul), a joint DePaul University-IIT reading seminar in discrete mathematics from Fall 2006 to Fall 2008. This seminar attracted a number of talented undergraduate and graduate students from IIT, UIC and DePaul, and helped build an active and attractive (to students) community of discrete mathematicians.

Menger day is held every year in April at IIT as a celebration of mathematics at IIT in honor of our most famous faculty member, Karl Menger. As a part of the Menger day activities, I have organized the student poster competition every year from 2008 to 2011. This competition honors our best undergraduate and graduate research of the past year and showcases this research through posters to the numerous visitors, from other departments within IIT, former faculty, alumni, and invited visitors from outside IIT, to the Menger day. This poster exhibition and competition has become an integral part of the festivities and helps present a comprehensive view of the original work of our students.

I have been a member of the examination committee of the annual undergraduate math competition at IIT (organized by I. Cialenco and the SIAM chapter) since May 2008. I have helped write problems and solutions for the exam, and graded the exam papers.

I have also judged the graduate student poster competition during the IIT Research Day in April 2007 and 2009, and the MAA Student Poster Competition during the Joint Mathematics Meetings in San Diego, January 2008.

I have been actively involved in recruitment of students to IIT. I have interacted with potential students/ applicants as a department representative at the IIT graduate college open house in March 2010, the graduate school fair at the joint mathematics meeting in January 2008 (San

Diego) and in January 2009 (Washington D.C.), and the graduate school fair at the Chicago area undergraduate research symposium at Loyola University in April 2008. I also conducted the CAMRAS scholarship interviews at IIT in March 2008.

As the MAA liaison of the department since 2007, I have distributed important announcements and opportunities for students as well as faculty from the Mathematical Association of America (MAA). I have encouraged undergraduate students to participate in REUs (Research Experiences for Undergraduates) in other universities, advised numerous students on applications for graduate programs and scholarships, and written recommendation letters in support of those applications for over 15 students from Applied Math department as well as engineering departments.

My participation in all these activities is meant to be a contribution to building an active mathematics community at IIT: attract best students, promote an environment that encourages students to be an active participant in Mathematics through seminars, competitions, and research, and provide opportunities for an active mathematical discourse that leads to new research including inter-disciplinary partnerships across IIT.