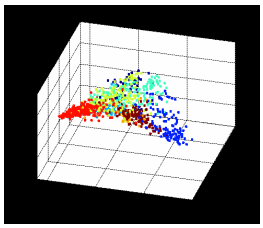
INSTITUTE FOR PURE AND APPLIED MATHEMATICS

Los Angeles, California



MATHEMATICS OF KNOWLEDGE AND SEARCH ENGINES

September 10 – December 14, 2007

ORGANIZING COMMITTEE: **RONALD COIFMAN** (YALE), **YUVAL KLUGER** (NYU), **YANN LECUN** (NYU), **VLADIMIR ROKHLIN** (YALE), **KARIN VERSPOOR** (LANL)

Scientific Overview

The rise of the search engine as a major tool for searches on the internet has spawned a large and growing industry that has changed modern commerce, education, and the study of scientific, financial, and social data bases. The underpinnings of these search engines are mathematical algorithms which are well adapted to large and rapid computations, mainly from linear algebra. While the impact of this industry has been enormous, there is a parallel development in the applications of these methods to other related problems concerning the extraction of knowledge from large databases. This long program at IPAM will be devoted to new mathematics and methodologies of knowledge engines: the mathematical procedures used to extract knowledge from large databases. While this includes topics related to search engines it is mainly devoted to the more general problem of finding features in a database or using defined features to search within a database. It is expected that this program will be of interest to a large number of scientific fields, including pure and applied mathematics, statistics, bioinformatics, and engineering.

Workshop Schedule

- Tutorials, September 11 - 20, 2007
- Workshop 1: Dynamic Searches and Knowledge Building, October 1 - 5, 2007
- Workshop 2: Numerical Tools and Fast Algorithms for Massive Data Mining Search Engines and Applications, October 22 - 26, 2007
- Workshop 3: Social Data Mining and Knowledge Building, November 5 - 9, 2007
- Workshop 4: Search Algorithms for Biological Datasets, November 26 - 30, 2007
- Culminating Workshop at Lake Arrowhead Conference Center, December 9 - 14, 2007

Participation

This long program will involve a community of senior and junior researchers. The intent is for participants to have an opportunity to learn about mathematics of knowledge and search engines from the perspective of multiple fields--notably mathematics, and computer science--and to meet a diverse group of people and have an opportunity to form new collaborations.

Full and partial support for long-term participants is available. We are especially interested in applicants who intend to participate in the entire program (September 10 - December 14, 2007), but will consider applications for shorter periods. Funding is available for participants at all academic levels, though recent PhDs, graduate students, and researchers in the early stages of their careers are especially encouraged to apply. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission and we welcome their applications. More information and an application is available online.

www.ipam.ucla.edu/programs/se2007

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