Indian Institute of Technology, Kanpur
Department of Computer Science and Engineering

New Course Proposal

Title: Advanced Data Management

Course No: CS698F

Units: 3-0-0-0-9

Pre-requisites: UG level course in Database management, knowledge of SQL queries. Good knowledge of programming. Basic understanding of computational complexity. Some knowledge of computer networks is good but not a must.

Proposed by: Medha Atre

Estimated Enrollment: 20

Other faculty members who could be interested in teaching the course:

Departments which may be interested: Computer Science

Level of the course: PG (6xx level) and senior UG (fourth year BTechs)

Short Description: With the growth of internet and Web 2.0 (user generated content e.g., Facebook, Twitter, Wikipedia) the amount of data to be handled has exploded in size. The underlying structure of this data is mainly “graph shaped”, which does not have a strict structure like relational data. Hence the challenges of storage and query processing over this data are different from the relational database systems, and this course will cover important topics in the storage and querying of this “graph shaped” data. The course will cover some components of the current hot-topics in the industry and research like “big data”.

In the end, this course will give students knowledge of the cutting-edge data management techniques (e.g., used in industries or big research labs). It will give good hands on programming experience as a part of the course project and practical aspects of the big data management. Additionally, introduction to the open (challenging) problems can give directions of further research for the interested students.

Topics: The main topics covered under this course are:

- Sources of graph shaped data on the web.
- Basics of the “Semantic Web” (RDF graph data).
- Modern techniques of handling graph data (from industry as well as academic research).
- Distributed management of graph data and challenges in it.
- Introduction to some theoretically and practically challenging problems in the graph data management.
- A course project.
References


