Discussion on Research and Teaching

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Research

- What is research?
  - *"The systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions." Oxford English Dict.*

- Solve a problem in an innovative way
- Find out a limitation of an existing published solution, and extend it

Find Research Area

- How to find good research areas
  - Browse through research papers from good conferences and journals
    - Database Tier 1: ACM SIGMOD, VLDB, IEEE ICDE, EDBT/ICDT
    - Database Tier 2/3: DASFAA, CSI COMAD, various workshops, ..
  - Attend good conferences in India
    - E.g. COMAD conference
  - View online talks
  - Find real world problems that are not solved satisfactorily
    - And abstract them so there is some hope of solving them.

Dig Deep ..

- Digging deep is key to research: read lots and lots of papers, internalize them
  - Bachelors: Knows nothing about everything
  - PhD: Knows everything about nothing!
- How to learn more about an area
  - Find some interesting papers and read them
    - And read key background material required to understand those papers
  - Find courses which have collected interesting papers on an area, and read them
    - E.g. papers on query optimization and Big Data covered in CS 632, Advanced DBMS, IIT Bombay

And Innovate

- Don't just accept what you read in a paper
  - Find limitations, find flaws
  - Find cases where the ideas described won't work well
- Figure out how to extend the ideas, or come up with new ways which will work in those cases
- Show your ideas work
  - Implement ideas, do a performance study comparing your approach with others

But Avoid Temptations..

- Plagiarism
- Fake Journals