



Research Issues in Databases

Kristen LeFevre

Assistant Professor, U of Michigan

DB Me Workshop

June 11, 2010

Fun Facts

- Grew up in Massachusetts and Minnesota
- Avid swimmer and skier
- Big fan of HGTV and coffee
- Sister Katie recently moved to Ann Arbor for pediatrics residency





I am NOT going to tell you...

- A review of current “hot” topics in DB research
- Why data privacy is awesome 😊
- How to do research
- What research topic is best for you
- Doom and gloom

Question: *How to choose a research project?*



Why Databases?

(OK, I lied a little...)

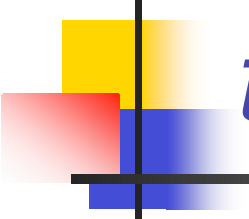
- Data management and analysis emerging as themes in all of computer science (+ other fields)
- This is a tremendous opportunity!
- DB Research accommodates very diverse topical interests (as they relate to data)
 - Systems, PL, Storage, “Cloud computing,” Hardware
 - Web search, Machine learning, Statistics
 - Algorithms, Theory
 - Security, Privacy
 - HCI, Social media, and More!



Why Databases?

(OK, I lied a little...)

- Also distinct approaches to inquiry, methods
 - Theory
 - Mathematical proof
 - Science / Social Science
 - Controlled experiments, user studies
 - Engineering
 - System design and implementation
- Great opportunity for people with diverse interests, those who like to synthesize ideas from multiple fields
 - Also some tough challenges (Bettina)



How to choose a research topic / project?

- Hard question!
 - Continuous process, not a one-time choice
- Somewhat dependant on advisor
 - “Vote with your feet”
 - Often flexibility to craft a project within advisor’s area of expertise
- Some practical advice and personal experience



If everyone else jumped?

- Don't pick a research project because everyone else is doing it!
- Pick a project because
 - You are passionate about the topic, and believe it is interesting and/or important
 - Helps if you keep track of the big picture
 - You enjoy the research style
 - E.g., system-building, theory, experimentation, design, etc.



Play Up Your Strengths

- Many aspects of research
 - Vision / problem definition
 - Design / engineering / implementation
 - Theory
 - Synthesizing ideas, explaining, motivating
- Everyone has strengths / weaknesses
- Find a topic / project that maximizes your strengths
- Work hard to improve in weaker areas



Not All Puppies and Kittens

- *Hard-work*, *persistence*, and *focus* are a big part of research success
 - Why it is important to choose something you enjoy!
- Be *flexible*
 - Research evolves over time
 - Enjoy the *process* of learning new things, refining ideas
 - Be open to projects, topics, career paths you never considered
 - Criticism as an opportunity for growth



Conclusions

- Future is bright for data management researchers
- Good career prospects for CS Ph.D.s
- Research is a long-term process, not a destination
 - Important to choose something you love, and enjoy the process!