Why Research?

- Course projects have fixed and expected outcomes
  - Little scope for *creativity* and *innovation*
- Lead the world with research
  - NIH (health sciences)
  - NASA (space sciences)
  - IBM, Microsoft, Google (hardware/software)
- Highly rewarding careers
Advantages for Grad School

- Get a head start in doing research
  - Find out if it is for you
- Need letters
  - From researchers would be great
- Authorship in papers
  - Many applicants have publications
  - Make your application look better
- Fellowships
  - NSF, Fulbright etc..
- Visit Europe !!
Many research opportunities for undergraduates at Maryland

- Independent study
- Undergraduate Research Assistant Program
- University Honors Program
- GEMSTONE program
Independent Research

- Talk to Faculty
- Work with them on their research projects
Maryland Student Researchers

- MSR (also URAP ?)
  - Maryland Center for Undergraduate Research (MCUR)
- Introduces undergraduates to research
- Spend 4-6 hrs/week working with a faculty member
- Receive an Undergraduate Research Assistant (URAP) notation on their transcript
- Non-competitive
  - open to students of all majors and disciplines
  - do not have to be an "A" student
    - minimum GPA 2.0
    - at least 15 credits completed at College Park
- http://www.ugresearch.umd.edu/programs/msr.html
University Honors Program

- Long-established program for the most talented students on campus in their first two years
- Undergraduate Research In Honors
  - offers opportunities to explore research via coursework and/or independent research
  - HONR 200
    - for students in their first year
    - learn about faculty research
    - explore practical/ethical issues surrounding research
  - HONR 201
    - Independent study
May choose to continue in one of the 40 Departmental Honors programs

Narrow your focus from the broad-based nature of the first two years of Honors work

Departmental programs usually involve working closely with a faculty mentor on an independent research project that often culminates in an Honors thesis

http://www.honors.umd.edu/
Honors students are invited to participate in Gemstone
- Team projects working with a faculty mentor
- Spanning all four undergraduate years
- A unique program that integrates technological and social issues

http://gemstone.umd.edu
Other opportunities

- www.ugresearch.umd.edu/opportunities/oncampus.html

Senior Summer Scholars
- Competitive grant sponsored by Office of Undergraduate Studies
- $3000 over the summer to 25 outstanding seniors

Discovery projects

Offcampus opportunities
- www.ugresearch.umd.edu/opportunities/offcampus.html
- ..
Database Research

- Exciting time to be doing database research
- Incredible amounts of data generated every day
  - In traditional contexts as well as new emerging environments
    - WWW, Social networks, P2P, XML..
    - Sensor networks, distributed cameras, GPS, RFID..
    - Biological data, life sciences data..
- Going from “Information” to “Knowledge” the most important challenge
  - Need to be able to store, process, reason about tremendous volumes of data
Current Research Agenda

★ Exploring data management challenges in: life sciences databases, sensor networks, social networks, moving objects, P2P

★ Distributed data acquisition and data dissemination

★ Spatial databases; visualization and indexing for high-dimensional data

★ Developing statistical modeling techniques and integrating them with traditional database systems

★ Management of probabilistic, imprecise and incomplete data

http://www.cs.umd.edu/areas/Databases