

Undergraduate Research; Research in Databases

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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, Fullbright etc..
- Visit Europe !!

Find Out for Yourselves!!

- 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

Honors In Junior & Senior Years

- 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/>

GEMSTONE

- 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

University of Maryland Database Group



Nick Roussopoulos



V. S. Subrahmanian



Lise Getoor

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



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