

Computer Science Overview

Michael Heath

Interim Head of Department
Fulton Watson Copp Chair



Strengths of Department

Faculty & Research

- Broad-based faculty with world-class expertise
- Emphasis on research with practical applications and real world results
- Cross-disciplinary initiatives
- Whole systems view

Students & Education

- Consistently ranked in top 5 nationally
- Challenging curricula develop highly disciplined, versatile computer scientists ready to tackle complex problems
- Senior Design projects bridge gap between classroom and real world
- Extensive existing engagements with State Farm on outreach & diversity, curricular, and student experience programs



Illinois Excellence in Broad-Scale Computing

- Emphasis on whole problem path
- Collaboration, cross- and inter-disciplinary efforts
 - Illinois Informatics Initiative
 - Blue Waters
 - Universal Parallel Computing Research Center
 - Information Trust Institute
- Strengths in complex systems research
 - Database Systems, Data Mining, Information Retrieval
 - Information Assurance
 - Networking
 - Security
 - Reliability



Department History

- 1949 — Digital Computer Laboratory founded
- 1952 — ILLIAC I becomes operational
- 1962 — Transistorized ILLIAC II completed, 100 times faster than ILLIAC I
- 1964 — DCL reorganized as Department of Computer Science
- 1965 — 1st undergraduate degree program
- 1965 — Design begins on ILLIAC IV, world's first parallel supercomputer, with 64 processors
- 1966 — 1st graduate degree program
- 1974 — ILLIAC IV becomes operational
- 1985 — NCSA and CSRD established



Department History

- 1993 — Mosaic, world's first Web browser, developed by CS students
- 1999 — Alumnus Tom Siebel donates \$32M for new CS building
- 2004 — Department moves into Siebel Center
- 2007 — NSF announces \$200M award to Illinois for Petascale system



Department Heads

- John Pasta, 1964-1970
- James Snyder, 1970-1985
- C. William Gear, 1985-1990
- Duncan Lawrie, 1990-1996
- Daniel Reed, 1996-2001
- Marc Snir, 2001-2007
- Michael Heath, 2007-?



Department Profile

- 707 undergraduate students
 - 595 Engineering
 - 112 LAS (Math and Stat)
- 427 graduate students
 - 320 Ph.D.
 - 107 M.S./M.C.S.
- 58 faculty members
 - 21 full professors
 - 13 associate professors
 - 18 assistant professors
 - 6 research professors
- 33 adjunct and affiliate faculty members
- 6 lecturers
- 67 academic support staff



Siebel Center

- 225,000 square feet on five levels
- 15 research labs
- 5 instructional labs (plus 4 in DCL)
- 9 classrooms (plus 2 in DCL)
- 200-seat auditorium
- 19 conference/seminar rooms
- 21 informal meeting spaces
- café, reading room, grad and undergrad break rooms
- 10 informational touch panels
- video wall

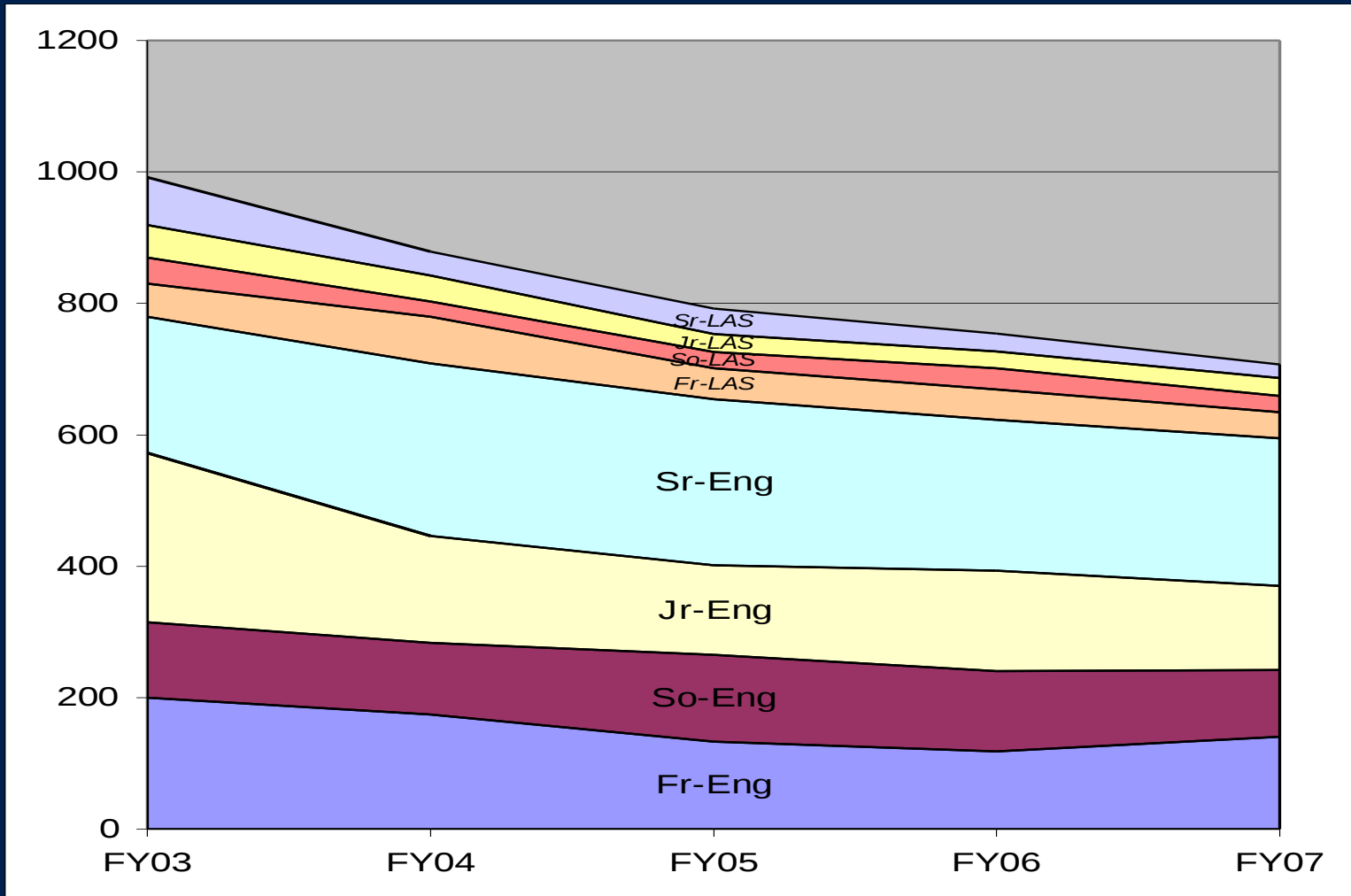


Undergraduate Degree Programs

- College of Engineering
 - B.S. in Computer Science
 - 5-year B.S./M.S. in Computer Science
- College of Liberal Arts and Sciences
 - B.S. in Mathematics and Computer Science
 - B.S. in Statistics and Computer Science
 - Considering additional combinations with other departments
- Other Programs
 - Minor in Computer Science
 - Minor in Informatics
 - Software Engineering Certificate



Undergraduate Enrollments

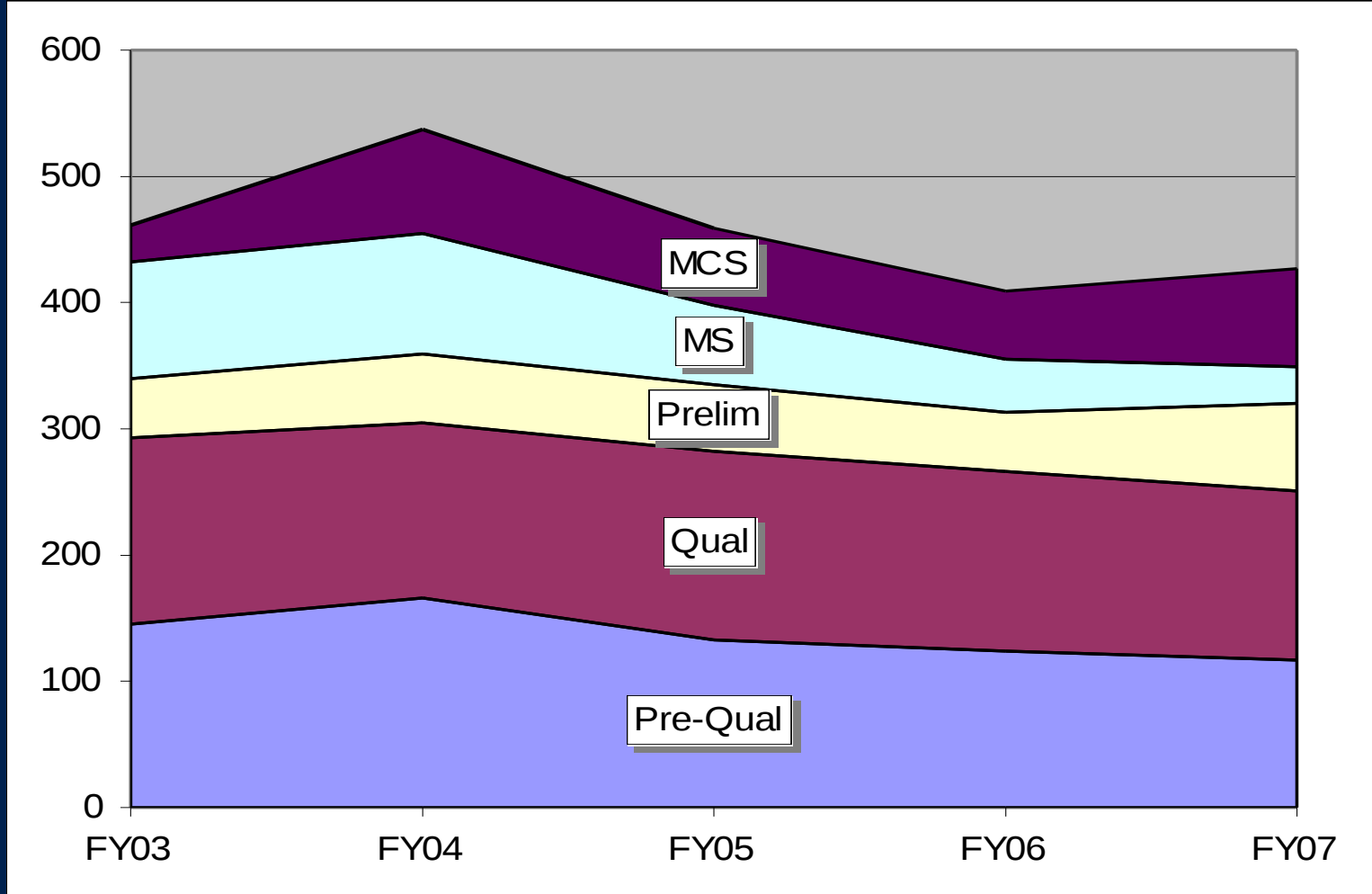


Graduate Degree Programs

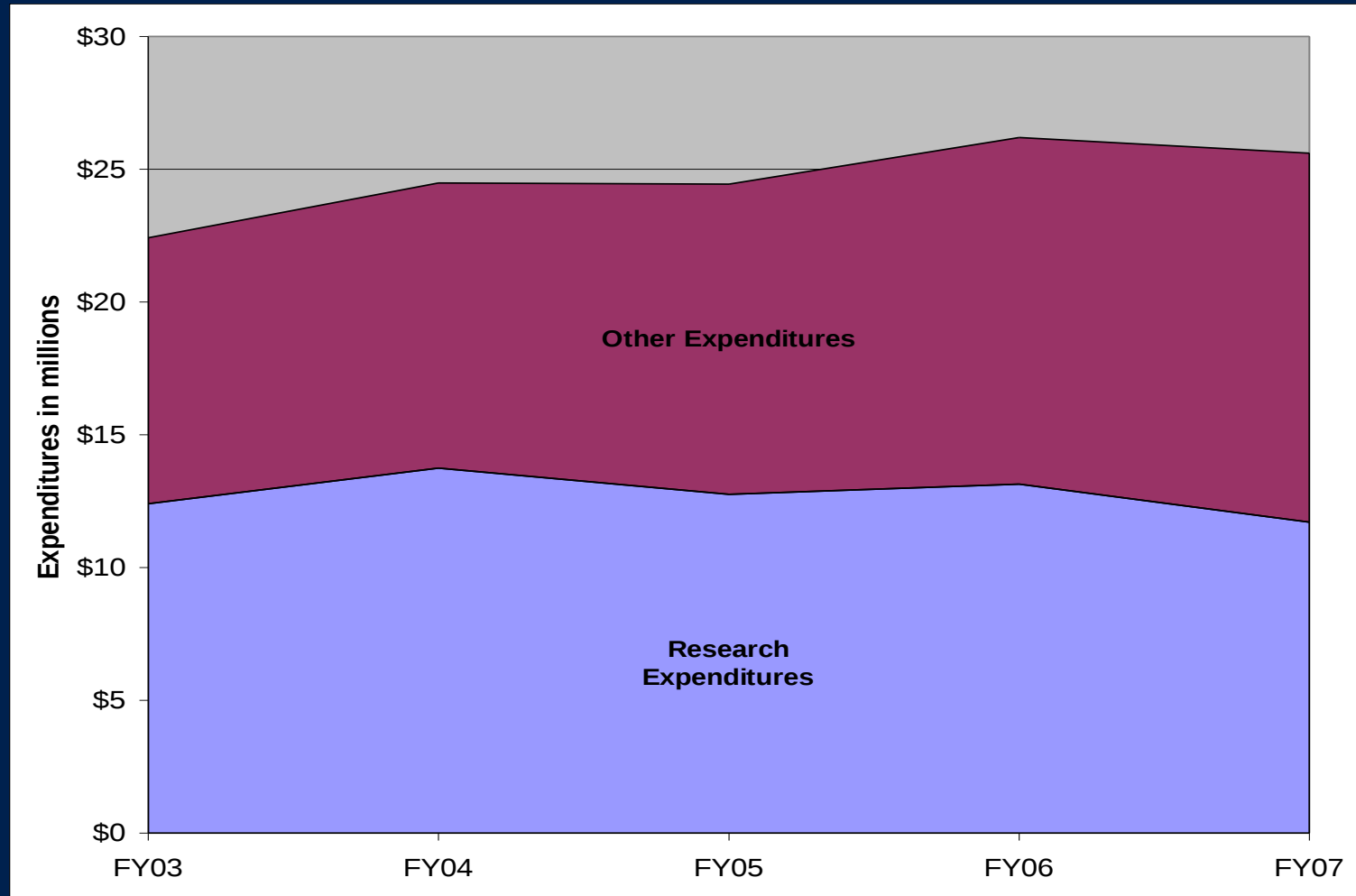
- Thesis Programs
 - Ph.D. in Computer Science
 - M.S. in Computer Science
- Non-Thesis Programs
 - Master of Computer Science (M.C.S.)
 - M.S. in Bioinformatics
- Online Programs
 - Master of Computer Science (M.C.S.)
 - Certificate program in specialized areas



Graduate Enrollments



Total Expenditures by Fiscal Year



Research Areas

- Algorithms and Theory
- Artificial Intelligence
- Architecture, Parallel Computing, and Systems
- Bioinformatics and Computational Biology
- Database and Information Systems
- Graphics, Visualization, and HCI
- Systems and Networking
- Programming Languages, Formal Systems, and Software Engineering
- Scientific Computing



Research Themes

- Scalability
- Security
- Reliability
- Sustainability
- Performance
- Complexity
- Simulation
- Communication
- Intelligence



Current Research Topics in Database, Data Mining, Information Retrieval

- **Semantic Data Enrichment**
 - Enable search across disparate data modalities and identify real-world entities and relations among them in text
- **Text Mining Techniques**
 - Reveal topical patterns in arbitrary text and correlations with contextual variables (time, location, info source)
- **Deep Web Analysis**
 - Develop techniques to enable data aware search and enable information integration
- **Visualization Techniques**
 - Enable visual display of data to reveal trends and features

