

Ph.D. Program Overview

Department of Computer Science
Carnegie Mellon University
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CSD IC August 2004

Who I Am

- Researcher, teacher, advisor
- Squash player
- Help is around the corner
 - Your advisor (once you have one)
 - Sharon Burks (Associate Department Head)
 - Me (Director of Graduate Programs, CSD)
 - Jeannette Wing (Department Head)
 - Patrick Riley (Ombudsperson)

CSD Ph.D. Program Goals

- Provide environment for you to become
 - Outstanding researchers
 - Excellent teachers
 - Future leaders
- The rest is up to **you**
 - Initiative
 - Dedication
 - Service

Seven Circles of CSD

- Immigration course
- Coursework
- Skills requirements
- Teaching
- Thesis proposal
- Dissertation
- Emigration course

Immigration Course

- Overview of department and school
- Faculty introductions
 - Research projects
 - Personal styles
- Social events
 - Area parties
 - Login ball
 - Fri Oct 1, 7:30, Pittsburgh Golf Club

Finding an Advisor

- Talk to individual faculty
 - Starting right away
 - Sometimes more than once
- Create ranked list (by Sep 24)
 - Should have more than one name
 - Comment on choices
- Handshake committee meeting
 - Reconcile faculty and student lists, funding
 - Commitment is not for life!

Working with an Advisor

- Advisor is mentor, friend, not boss
- Research from day one
 - Project (with fellow students, faculty)
 - Reading and exploration
- Advising styles differ greatly
 - Understand mutual expectations

Changing Advisors

- Many students change advisors
 - Evolving research interests
 - Mismatch of personal styles
 - Advisor leaving
 - **Not** funding issues
- A routine, constructive process
 - **Not** a personal or professional failure
 - Talk to me, old advisor, new advisor
 - Co-advising sometimes appropriate

Coursework

- Five star courses, one each from 5 areas
 - Breadth of knowledge
 - Exposure to research styles in different areas
 - Not a filter (no qualifiers or comprehensives)
- Three free graduate electives
 - At least two from within school (SCS)
 - Fahlman unit (TA grad course)
 - Satya unit (supervised project)
 - Veloso unit (outreach/vision)

Areas and Star Courses

- Algorithms/Complexity
 - Algorithms
 - Complexity theory
- Programming Languages
 - Type systems
 - Semantics
- Artificial Intelligence
 - Advanced AI Concepts
 - Machine Learning
 - Planning, Execution, and Learning
- Software Systems
 - Advanced operating and distributed systems
 - Database management systems
 - Networking
- Computer Systems
 - Computer architecture
 - Optimizing compilers

Skills Requirements

- Speaking
 - Research talk to general CS audience
 - Speaker's Club: uniform, high standards
- Writing
 - Two faculty members, one students
 - Iterative process
- Programming
 - Currently under review by DRC

Teaching

- Teaching requirement
 - Serve as teaching assistant twice
 - Assigned by undergraduate program administrators
 - Recitation, office hours, assignments, exams, grading, occasional lecture
- TA certification for non-native speakers
- Teaching fellow program
 - With Eberly Center (IC talk today, 1:30)

Thesis Proposal

- Usually after courses, skills, teaching
- Assemble committee with your advisor
 - Typical: Advisor + 2 CSD/SCS Faculty
+ 1 Outside CMU
- Written document contains
 - Early thesis outline
 - Partial results
 - Background and related work

Thesis Proposal Presentation

- 50 minute talk
- Outlines preliminary results and plans
- Convince committee that
 - You have a viable topic
 - You know prior and related work
 - You can carry out the remaining research
- Obtain committee feedback and advice
- Not pass or fail

Dissertation

- Good writing takes time
 - No staple-gun theses
- Stay in touch with the committee
 - Correct course if necessary
 - Remaining focused can be hard
- Defense
 - Give your committee time to read the thesis
 - Sometimes tricky to schedule
 - Real test comes before

Emigration Course

- Lectures on
 - Life in the real world (academia, research lab)
 - Job talk and interviewing
- Might attend some before your last year!

Reminder: Program Goals

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Help and Further Information

- Help is around the corner
 - Your advisor (once you have one)
 - Sharon Burks (Associate Department Head)
 - Me (Director of Graduate Programs, CSD)
 - Jeannette Wing (Department Head)
 - Patrick Riley (Ombudsperson)
- Ph.D. document, other information via
 - <http://www.cs.cmu.edu/~burks>