Advice for PhD Students from the Graduate Advisor

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PART 1: Ten Keys to Success In Graduate School

Based on slides prepared by
Matthew Turk

Your Success = Our Success

- The ranking of this department in ten years will be directly related to the quality of the work you do here as graduate students
  - Success of graduate students means success for faculty, undergraduates and staff!
- You can make the department better!
  - It is pretty good already, but there is always room for improvement

No Excuses, Great Opportunities

- You are at a research university in US
  - 17 of the world's top 20 universities are in US
  - In computer science US is especially dominant
  - This is the place to be to do research in this area
- Computer Science is a very exciting and very young discipline
  - Has fundamental problems that are unsolved (e.g., P =? NP)
  - It can change the society (e.g., WWW)
  - Contributes to basic science (e.g., bioinformatics)

What is graduate school all about?

- The PhD process is an apprenticeship – not a job
  - You're here to *accomplish* something and to *become* something
- It's not like being an undergraduate student
- During your PhD
  - Most of what you learn comes outside of classes
    - "What's on the exam" is not your main concern
  - Requires a different set of skills
  - *Results* count (not time, not effort)

No guarantees

- You need to contribute something *original*
  - This is why your advisor can never guarantee that you will graduate in a certain amount of time
- We will help you, but eventually you have to come up with some contribution that will deserve a PhD
- The great part is the contribution will be all *yours*!
  - So you will get all the credit (and the awards)

Evolution of a PhD Student

- Phase 1: You feel like you know a lot
  - You were very successful as an undergraduate and you did not find it very challenging
- Phase 2: You feel like you know nothing
  - You realize that undergraduate textbooks simplify things a lot, and there is whole lot more to learn
- Phase 3: You feel like maybe you can survive
  - You write a paper and it gets accepted
- Phase 4: You are an expert in a research area
  - You correct your advisor's mistakes

You may go back and forth between phases 2 and 3 for a while

How to Succeed in Graduate School

- 10 pieces of advice for success in graduate school

1. Manage Your Time

- Goals, priorities, and planning
  - Set goals
    - Make sure that you have subgoals that are achievable!
  - Make plans about how to reach your goals
    - Prioritize – do important things first
  - Don’t waste time
    - “Is this activity helping me to achieve my PhD?”
    - Choose activities which help you achieve more than one goal
  - Keep a notebook, write these things down

2. Develop intellectual discipline

- Think!
  - Set aside time for thinking. Really.
- Read!
  - Get to know the literature in your area intimately (not superficially, read the details, think about the skipped details, why did they skip them?)
- Act!
  - Don’t feel like you have to know everything first
  - Don’t worry about being wrong
- Evaluate!
  - Solicit feedback – most ideas aren’t so good…

3. Be proactive

- Don’t wait to be told what to do
  - Don’t be passive; in fact, be aggressive!
  - Make things happen
- You will not be spoon-fed
  - What you get out of graduate school is a non-linear function of what effort you put into it
- Graduate school can be very unstructured
  - Unlike law school or medical school
  - So it’s up to you (not your advisor)

4. Learn to communicate well

- Speaking
  - Communicate clearly
- Writing
  - Organization and clarity
  - Attention to detail!
- Presenting
  - Not just “talking,” but *communicating*
- TAship
  - A great opportunity for improving your communication skills, do not waste it!

Your intelligence and ideas will be judged by your ability to communicate in English

5. Develop an intellectual community

- Develop an intellectual community with your peers at UCSB and in other universities
  - Ask questions
  - Discuss ideas
  - Brainstorm
  - Argue, challenge
  - Collaborate

6. Schmooze! (a.k.a. Networking)

- Get to know the people in the department (faculty and grad students), and other people in your field
  - Don’t wait – introduce yourself!
- Go to conferences and meet other grad students and “famous” researchers
  - Be aggressive!
- Talk with visitors: “pick their pockets”
  - You never know who will someday offer you a job, write a reference letter, review your paper, give you invaluable feedback or insight….

7. Choose a good research problem

- This is the hardest, and most important, part of research!
  - A problem you can solve during your PhD, but not trivial
  - A problem your advisor knows something about
  - A problem that would not require you to get another degree in another discipline
- Actively search for a problem
  - Read, listen, ask
- The most important thing is:
  - *Work on something you like*!

8. Understand the faculty

- We are very busy.
  - That's no excuse. We *do* have time for you.
- We know more than you do.
  - At least for a little while.
  - But not as much more as you might think.
- We are not superior beings.
  - Don't be intimidated, express your ideas.
  - Give *us* feedback too!
- We are part mentor, part colleague, part human.

9. Study successful people

- Senior grad students, faculty, pioneers, leaders in your field, …
  - Read biographies
  - Who are your heroes, mentors?

- Seek advice
  - But modify it to your particular situation

10. Have a Life

- Work hard, schmooze, think, read, program, experiment, build, study, practice, ….
  - So little time and so much to do!!

- Still, amidst the chaos of graduate school, it is very important that you do not lose sight of who you are and what makes you tick.
  - Have a social life
  - Don’t neglect your family and friends, your health, your sanity
  - Do make time for things that are important and meaningful to you

More Advice

- Matthew Turk has a compilation of useful information and advice for graduate students:

  http://www.cs.ucsb.edu/~mturk/Students.html

PART 2: Advice on Finding a Research Advisor

Resources

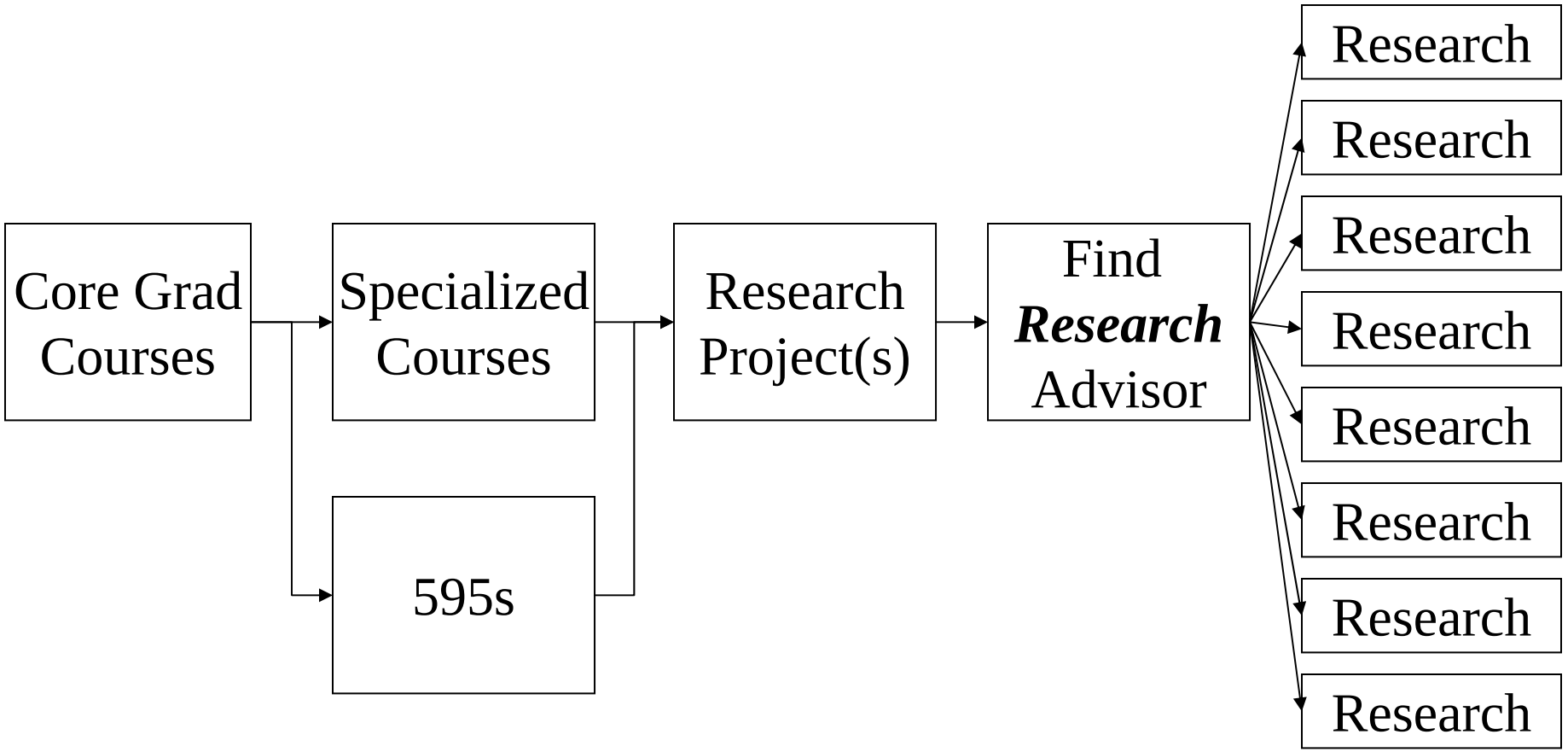
- Courses
  - Great for establishing contact with faculty
- Faculty
  - Learn about their research, go talk to them
- Students
  - Talk to students who are RAs, learn about their research
- Departmental seminars, colloquia, MS/PhD exams
  - Attend them!
- Department webpages
  - Look at the research lab pages, papers

Courses

http://www.cs.ucsb.edu/courses/

- < 100: Lower division courses
- 100 level: Upper division courses
- 2xx level: Graduate courses
  - 290: special topics
- Others
  - 595: Group Studies/Seminar
  - 596: Directed Research
  - 501, 502: TA Training, TA Work
  - 597: “Exam” Preparation
  - 598: MS Thesis Research
  - 599: PhD Dissertation Research

Activities in the First One-to-Two Years of PhD



Faculty Research Areas

http://www.cs.ucsb.edu/people/faculty/

- BioInformatics (Singh, Ibarra)
- Architecture (Chong, Sherwood, Krintz, Van Dam, Zheng)
- Database Systems (Agrawal, El Abbadi, Su, Singh)
- Foundations & Algorithms (Egecioglu, Gonzalez, Ibarra, Suri, Van Dam)
- Intelligent & Interactive Systems (Hollerer, Smith, Turk, Wang)
- Networking (Almeroth, Belding, Zhao, Zheng, Krintz, Suri)
- Operating Systems & Distributed Systems (Cappello, Wolski, Yang, Agrawal, El Abadi, Krintz, Singh, Zhao)
- Programming Languages & Software Engineering (Bultan, Krintz, Kemmerer, Sherwood, Su)
- Computational Science and Engineering (Gibou, Gilbert, Petzold, Yang)
- Security (Kemmerer, Kruegel, Vigna, Zhao)

Primary research area
Secondary research area(s)

Research Labs

http://www.cs.ucsb.edu/research/

- The Distributed Systems, Databases, and Bioinformatics Lab (DBL)
- Computer architecture lab (ArchLab)
- The Lab for Research on Adaptive Compilation Environments (RACELab)
- LINK: Lab for Intelligent Networking
- Database Systems Lab (DSL)
- Four Eyes Laboratory (Imaging, Interaction, and Innovative Interfaces)
- Computer Vision Research Laboratory
- Next Generation Networking Group (NG2)
- Networking and Multimedia Systems Lab (NMSL)
- Mobility Management and Networking (MOMENT) Lab
- CURRENT: Lab for Secure and Reliable Networking
- Verification Laboratory (VLab)
- Computer Security group
- Computer architecture lab (ArchLab)
- Combinatorial Scientific Computing Lab
- Computational Science and Engineering Lab

Attend Departmental Activities

- Research Groups
  - 595 seminars (including TA training in Fall and faculty research seminar in Winter)
- Department Colloquia
  - Distinguished Lecturers and other visitors
- Presentations by Students
  - MAE, Proposal, Dissertation, Project, Thesis
- Graduate Student Association
  - Get involved, serve in the departmental committees
- Social Events
  - Attend coffee hours, picnics/cookouts, etc.
- Graduate Student Research Workshop in Fall
  - http://gswc.cs.ucsb.edu/
- Workshops and Conferences organized by Faculty
  - Volunteer is you are interested in the area

Your Webpages!

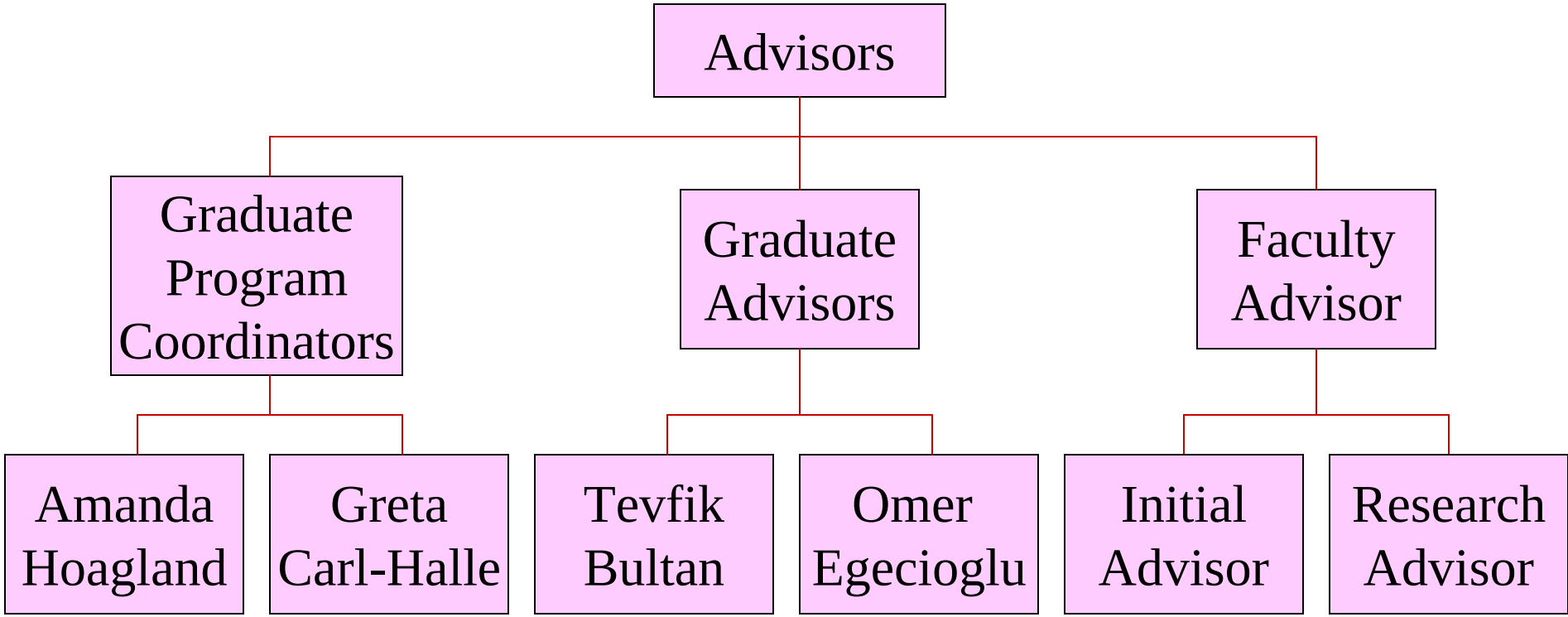
- Faculty who are looking for RAs would like to
  - see your CVs
  - learn about your research interests

- Keep an up to date webpage at:
  - http://www.cs.ucsb.edu/~your-user-name
  - You can find lots of examples at:
    http://www.cs.ucsb.edu/people/graduate

HOMEWORK ASSIGNMENT

- Due March 4th
- Prepare your webpage and put it at:
  - http://www.cs.ucsb.edu/~your-user-name
- List the following in your webpage:
  - Your research interests
  - Your CV or resume
  - The courses you have taken at UCSB
  - Significant software projects you developed
  - Papers you have written

Sources of Advice/Information



- Department webpages: http://www.cs.ucsb.edu/