**Grad School Survival Skills**  
CPS 300: Introduction to Graduate Study  
Jun Yang  
September 2, 2009

**Announcements**
- Mailing lists  
  - Ping pong, Go, movies, etc.: recreation@cs.duke.edu  
- Exchanging ideas on research and computing, forming project teams, etc.: askgrad@cs.duke.edu  
- Currently traffic is low, but we could resurrect it  
- Ask Diane to get onto these lists  
- "Resources" pages on the website have been updated  
- Thanks for your suggestions on what to cover in CPS 300!  
  - Student panel for sharing info/experience  
  - Overview of research projects and open positions  
  - Academic/industry career planning

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**Annual progress report**  
(cf. Addendum document)  
Provide by the end of every fall:  
- CV  
- Research summary (1-2 pages): big picture + progress + future directions  
- Progress statement (1 page): self assessment of progress + goals for the coming year + plan for meeting milestones  
- BibTeX bibliography of your pubs and works-in-progress  
- Feedback from faculty around mid-February:  
  - Written feedback from your mentor/advisor  
  - Discussion at a faculty meeting  
- Request for additional progress steps, or in the worst case, withdrawal (let’s hope this won’t happen!)

**On picking pros/topics**
- Most important: work on something that you love  
  - Or else grad life will be miserable  
  - But then, tastes are sometimes acquired...  
- Flexibility vs. concrete projects  
- Large vs. small groups  
- Hands-off vs. hand-on  
- Practical impact vs. intellectual challenge  
- Junior vs. senior  
- Funding prospects  
- Having non-CS advisor is fine, but requires more effort  
  - Good idea to find a champion in CS

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**On approaching pros**
- Start early; they want to see you "in action" before committing  
- Show you have background/skills, or can acquire them quickly  
  - Past projects, current course project  
  - Communicating, writing, coding...  
- Show you have the right attitude/habits  
  - Initiative, punctuality, genuineness, independence, meticulousness, tenacity, flexibility, ...  
- Short, productive meetings > long, one-way monolog
  
  - What if you got completely lost in the meeting?  
  - What if you were just given a paper to read?  
  - What if nothing concrete came out of the meeting?

**When to meet with advisors**

**WHEN TO MEET WITH YOUR ADVISOR**  
Is there ever a good time?  

<table>
<thead>
<tr>
<th>Beginning of the week</th>
<th>End of the week</th>
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</thead>
<tbody>
<tr>
<td>Pro: Get it out with quick</td>
<td></td>
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<tr>
<td>Cons: You have a guaranteed date with work on Sundays</td>
<td></td>
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<tr>
<td>Mid-week</td>
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<tr>
<td>Pro: Good balance</td>
<td></td>
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<tr>
<td>Cons: Give you time to work on feedback</td>
<td></td>
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<tr>
<td>Saturday/Sunday</td>
<td></td>
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<tr>
<td>Pro: There is no &quot;yes&quot;</td>
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<tr>
<td>Cons: Your advisor is a wonderful mentor. Good luck with that.</td>
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</tbody>
</table>


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9/2/2009
Keep the pressure on!

- Too often, advisors make advisees pressured, guilty, and scared.
- But it should be the other way around!
  - Good advisees should make advisors feel (happily) pressured, guilty, and even scared.

Take initiative!

- Propose weekly goals, meeting agendas, new problems.
  - Note "propose" ≠ "set"; you will need your advisor's guidance.
- Learn new, related work yourself and fill your advisor in.

Run initiative!

- Propose weekly goals, meeting agendas, new problems.

Communication is important

- Want your advisor to be your best advocate?
- Always keep him/her in the loop!

On finding related work

- Ask your advisor, who can offer good starting points and see not-so-obvious connections.
- Follow citations (forward & backward).
- Google (Scholar) + online databases (e.g., ACM DL, DBLP)
- Need to build up a list of useful keywords.
- Rank using citations/venue prestige.
- Routinely check top venues.
- Share with fellow students (reading groups, journal clubs).
- Talk to people at seminars, conferences, ...
- Talk to those outside your field.
  - Start with your fellow grad students!
Anxiety vs. reading

Deciphering academese

How to read a paper

Above all, question authority
- Identify the problem being solved
- Attack the problem yourself, without looking at solutions
  - At least come up with their "strawman" solution
  - Might even get a better solution!
- Read their solution and compare it with yours
  - Are you convinced which one is better?
- Write a short, poignant summary; record in your bib db
  - Don't just copy their abstract
  - Keep additional notes in your bib db when you revisit the paper or discuss it with others

On reading motivation

- Is the problem new?
- Is the problem important?
- Is the problem interesting?
- Is the problem contrived?
- Learn how people make good/bad pitches
  - Some papers overstate/understate their applicability
  - Can you do better?
  - Come back after finishing reading: did they solve the same problem motivated earlier?

On reading evaluation

- Do the experiments tell you anything new?
  - Many simply confirm the obvious!
  - How do you make it more interesting?
- Is the paper trying to hide something?
  - Unexplained "magic sauce"
    - E.g., how to tune a parameter that affects performance
  - Choices of workloads and parameter ranges
    - E.g., synthetic datasets, unreal uses of real datasets, or x-axis covering a small range
  - Choices of performance metrics
    - E.g., an index costs 1/10 of the I/Os incurred by a full scan—great?

Other reading tips

- Read related work carefully
  - A glimpse at the bigger picture and pointers to follow to learn more about the problem/area
- Think beyond their related work discussion
  - Congrats if you uncover non-obvious connections to other areas!
- After you finish reading
  - What is the "take-away" message?
  - Think about future work
    - What assumptions can be relaxed or introduced?
    - Learn to appreciate their contributions
  - Don't judge what a paper is about by its abstract
    - Corollary: if you cite it, better read beyond the first page!
More announcements

- Next Wednesday: Joe Shamblin on computing in a computer science department
- Homework (due two weeks from now by email)
  - Talk to at least one faculty member or senior student
  - Get recommendation of a recent and/or important paper in an area/project that interests you
  - Get a sense of the important publication venues in this field
  - Read the paper suggested to you
  - Find a few (between 2 and 5) related papers; skim them
  - Prepare a BibTeX file of all above papers
  - Prepare a short document (≤ 2 pages)
    - Summarize (in your own words) the paper you read
    - Write a few sentences about each related paper