Early Career Advice

The First Diversity in Games Research DiGR Workshop

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Background – Susan Rodger

Intro #1: The Technical Me...
- NCSU BS, Purdue PhD
- Rensselaer 89-94 – Assist Prof
- Duke ‘94-now - Professor of the Practice (assist, assoc, full)
- Research: Visualization, algorithm animation, computer science education

Intro #2: Non-Technical Me
- Married to Thomas (met in graduate school, CS – Networking)
- Kids: Erich (17), Markus (14) – Always trying to keep up with them
- 3 cats, over 200 fish
- Other fun: swimming, running, baking, write Wikipedia pages
What happens when your hobby and your career collide...
Adventures in Alice Programming
Grades 5-12 Outreach

www.cs.duke.edu/csed/alice/aliceInSchools
Adventures in Alice Programming

- 2-week Teacher workshops
  - Over 200 teachers, middle school, high school, some elementary
  - First week Teach Alice, Practice
  - Second week - Develop Lesson Plans
  - One-week follow-up workshop the following summer
  - Summers 2008-2015, funding for lodging

- Main Sites:
  - Duke University, Durham, NC
  - Charleston/Columbia, SC
  - San Jose, CA (starting 2014)
3-4 Part getting started tutorials

• One long story in three or four parts (about 3 hours)
• 4 stories to pick from
Example: Getting Started Tutorial teaches:

- Placing objects
- Moving objects
- Setting up Camera tripods and moving between views
- Using built in methods and writing your own
- Gluing objects together
- Adding sound, 2D pictures to enhance world
Tutorial for Simple Game – Control boat, earn points

Click Instructions to Start

To win this game, you must steer the boat through each ring and beat the clock. You receive one point for each ring, and there are 10 rings, so if your score is less than 10 at the end, you lose!
Tutorial for Adventure Game – Find objects in order
Harry Potter Challenge

- Mix of programming and math challenges

- **Hailey Programmer and the Goblet of Java**

  You will receive a password at the end of each level that will be used to unlock the next level. WRITE THESE DOWN!

  If this is your first time playing, select Charms.
Harry Potter – Math/computing
Level 1 Charms - before
Harry Potter – Math/Computing
Level 1 Charms - after
JFLAP
(for over 20 years, jflap.org)
Notable Women In Computing
Write a Wikipedia page
for info on project and cards:  bit.ly/NotableW
Starting and Growing Your Own Research Program
Agenda

• The CRA-W
• Defining your research program
• General advice
• And some more specifics
CRA-W
Computer Research Association Committee on the Status of Women in Computing Research

Mission increase the participation and success of women in computing research

www.cra-w.org
What does CRA-W do?

Individual & Group Research Mentoring

**Undergrads**: Undergraduate Research Experiences

**Undergrads**: Distinguished lecture role models

**Grad Cohort**: group mentoring of grad students

**Grad Students**: Discipline Specific Research workshops

**PhD Researchers**: group mentoring of early & mid career @ CMW, CAPP, Hopper & Tapia

600+ students and PhD researchers a year

[www.cra-w.org](http://www.cra-w.org)
Defining a Research Program

- What is the overall theme of your work?
- What do you LOVE to do?
- What are your short, medium, and long-term goals?
- What steps do you need to take now and in the future to meet those goals?
Some General Advice....

• Developing your reputation
• Building collaborations
• Getting the resources you need to do your work
Develop Your Reputation: Academia

• Identify a strong research problem with clear short-term, medium-term and long-term goals
  – Be mindful of overlap with advisors or senior faculty
  – Establish your lab or group as quickly as possible
  – Identify and mentor strong students
  – Publish in the publications that matter the most

• Selectively do service that enhances your reputation
Develop Your Reputation: National Lab or Industry

• Identify how you can contribute to the organization while building your career
  – Develop your overall research and engineering capabilities
  – Establish your expertise/carve out your niche
  – Identify good collaborators and champions
  – Produce deliverables on time, show impact and relevance
  – Practice good, punchy short presentations/demos

• Maintain your external visibility
  – Publish ... or perish
  – Host interns and visitors, collaborate with academia
Reputation = Work + Networking

• Network
  – Attend *important* conferences
  – Volunteer selectively in conferences and professional associations
  – Help others

• Self-promote
  – Give talks
  – Maintain your online presence
    • Your organization’s website
    • Your own website
    • Google Scholar/Microsoft Academic/Research Gate
    • Social media
Build Collaborations

• Internal and external collaborators
• People you enjoy
• Compatible or complementary skill set
• Junior researchers who are also starting research careers and have compatible skills
• Senior researchers who think well of your work
• Be generous with co-authorship on papers
Build Collaborations

• **Do**
  – Communicate effectively and be responsible
  – Learn to multi-task
  – Have a contingency plan

• **Don’t**
  – Be a “student” for someone else
  – Take it personally if a collaboration does not work
  – Be the programmer or tech support for another discipline
Develop Proposals

• **Look for new proposal opportunities**
  – Early career proposal calls
  – As a collaborator/subcontractor
  – Internal funding grants
  – Travel grants
  – Private foundations or companies
  – Faculty Fellowships: NASA, Microsoft etc.

• **Learn the rules and constraints of your organization with respect to funding**
  – Human subjects, environmental etc.
Develop Proposals

• Learn how different organizations work and how they select proposals
• Ensure that your proposal is a good fit and addresses all review criteria
• Serve on review panels
• Talk to the program manager
• For Academics: talk to friends in industry
• For Industry: don’t assume you are ineligible for grants
Tradeoffs and Priorities

• Funding: ask yourself “why not?”
• Service: ask yourself “why?”
• Maintain a high quality of teaching, but remember, most people don’t get tenure for teaching
• Follow the problems you want, but bear in mind how you will publish and fund your work
Be Your Own Advocate

• Take credit for your work
• Avoid working with people who do not give you credit for your work
• Present your work regularly
  – Elevator speeches
  – Blogging, microblogging, social media
  – Departmental seminars, manager meetings, etc.
• Meet the program managers and organizational leaders who will have influence on your funding
• Despite what your mother told you, it’s okay to brag a little
In closing

• Enjoy what you do... it’s a great career
• Feel and share the passion in research

• Don’t pull the ladder up!