

Research Methods in computer science

Fall 2013

Lecture 1

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Objective

Learn how research is done
in computer science

Improve research
productivity

Topics Covered

Papers: Read, write, evaluate

Presentations: create, perform, evaluate

Other topics

- Research thinking

- Graphs and visualization

- Tools

- Statistics and data analysis

- Experiment design

Who Should Take this Course?

Ph.D. Students in early career

MS Thesis students

Administrative Information

3 credits

Can use this course in place of 6110

File a petition requesting substitution

Meet Tuesdays/Thursdays at AH201

Office hours Tuesday 4-5pm

<http://www2.cs.uh.edu/~gnawali/courses/cosc6397-f13/>

Grading

Pass/Fail

To Pass

- Submit all homeworks

- Each homework graded 0 or 1

- Average grade must be > 0.75

- Participate in activities (conference, etc.)

Topics for today

Deliberate Practice

Research Ethics

Research Formulation

Deliberate Practice

Observe

- Find good papers and presentations

- Study the content and style

Identify Skills

- Compare with your habits/skills/outputs

- Details (not high level like “writing”)

Practice

- Drills to challenge and improve

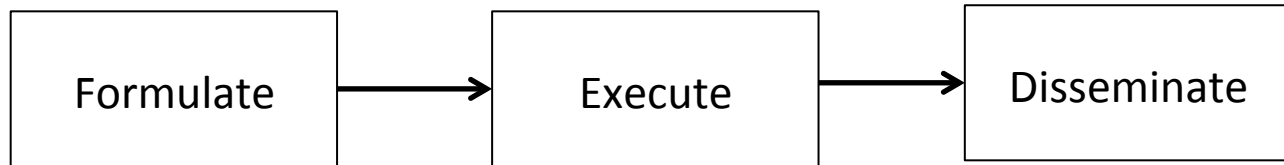
- Iterate with feedback

Research Ethics

Narrow focus in this course

Understand and minimize bias

Identify and disclose conflicts



Research Formulation

What are you trying to do? Articulate your objectives using absolutely no jargon.

How is it done today, and what are the limits of current practice?

What's new in your approach and why do you think it will be successful?

Who cares?

Research Formulation

If you're successful, what difference will it make?

What are the risks and the payoffs?

How much will it cost?

How long will it take?

What are the midterm and final "exams" to check for success?

Assignment 1

Make a list of skills you need to practice.

Write one-paragraph description of your research interest.

Write one-paragraph description of the research project you want to pursue during the semester.