

CMPS 7010 Research Seminar

Instructor: Prof. Zizhan Zheng

Personal

- Instructor: Prof. Zizhan Zheng
 - Office: Stanley Thomas 307B
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 - Email: zzheng3@tulane.edu
 - Research Interests: Networks, Machine learning, Security
- Introduce yourself ...

Meeting Times and Course Webpage

- Wednesdays and Fridays 4:00-5:15 pm, Stanley Thomas 302
- Course Webpage:
 - <http://www.cs.tulane.edu/~zzheng3/teaching/cmps7010/fall19>
 - Used to post class schedule, slides, reading materials, etc.

Topics (tentative)

- Overview
 - Advice on PhD Research
 - PhD student orientation (Prof. Ram Mettu)
 - Problem and solution
 - Paper reading and presentation
 - Scientific writing
 - Evaluation
 - Teamwork
- Will cover both **advice** and **tools**
 - Suggestions on topics are welcome

Paper Reading and Presentation

- 2-3 presentations per student
 - Each presentation may cover up to two papers (on the same topic)
 - comment on problems, technical contributions and limitations, and presentation styles
- Ask your PhD advisor for papers
 - technical papers only (no review papers)
 - related to your term project
 - send me the paper(s) one week before the presentation date
- **Everyone** should read the paper(s) **carefully** before each presentation

Term Project

Milestone 1: research topic (09/18)

Milestone 2: problem formulation and related work (10/16)

Milestone 3: preliminary solution (11/06)

Milestone 4: evaluation plan (11/20)

Milestone 5: final presentation and term paper (12/05)

- Milestones 1-4: a 1-2 page draft and a few slides each
- Term paper should have
 - all the sections of a typical research paper: abstract, intro, related work, model, solution, evaluation, conclusion, references ...
 - some preliminary results
 - at least one figure and at least one table

Grading

- Class participation - 30%
- Presentation - 30%
- Term Project – 40%

- A \geq 90%, B \geq 80%, C \geq 70%, D \geq 60%, F < 60%
- All grades will be posted on Canvas.

Research in CS at Tulane

Meet our faculty: <https://sse.tulane.edu/cs/faculty>

Meet your peers: <https://sse.tulane.edu/cs/academics/graduate/students>

Advice on PhD Research

CMPS 7010 Research Seminar

Advice on PhD Research

- Work Really Hard
- Work on Important Problems
- Work with Your Advisor
- Sell Your Research
- Integrity in Research
- ...

References

- [You and Your Research](#) by Richard Hamming
- [Four Golden Lessons](#) by Steven Weinberg
- [PhD Research: Elements of Excellence](#) by Ness B. Shroff
- [Managing Your Career as a PhD](#) by Deepa Kundur
- [Advice for early-stage Ph.D. students](#) by Philip Guo
- [Musings on Grad-School Work Ethic](#)

Are You Ready for PhD Study?

- A long-term commitment: 5-6 years
 - Very few **highs**, lots of **lows**
 - Need to work independently most of time
- Getting a good GPA is **not** sufficient
 - You do need to take a variety of courses to prepare yourself for research
- The goal is to create **new** knowledge
 - This can be the **coolest** thing in the world, but it can also be very **frustrating**

Work Really Hard

- Making progress is difficult for new PhD students
 - Lack of experience & preparation
 - Fierce competition
- Need to work extremely hard
 - Working 10% harder, you can be twice more productive (Dr. Richard Hamming)
- **Emotional commitment** is the key to success

Work on Important Problems

- "Finding a good problem is half the battle" - the **most** important thing in your PhD
- What problems are important?
 - **Novel**: your research should create new knowledge
 - Potential for high and long-lasting **impact**
 - **Fundamental**: depth is more important than breadth
 - **Challenging**: "No matter how smart you are, the problem should take you time to solve" ("[PhD Research: Elements of Excellence](#)", Ness B. Shroff)

How to find important problems?

- Read hundreds of papers
- Talk to top/active researchers in your field
- "Go for the mess – that's where the action is"
 - [Four Golden lessons](#), Steven Weinberg
- Think hard, think deeply

Sell Your Research

- **Write** clearly
- **Publish** at top venues
- **Talk** to people (not) in your area
 - Formal talk
 - Informal talk
- **Publish** code & datasets

Work with Your Advisor

- Understand your advisor
 - your advisor is busy with many things: teaching, research, writing proposals, service, giving talks, etc.
- Make your advisor want to help you
 - Be well prepared
 - Be responsible
 - Build trust
 - Challenge your advisor

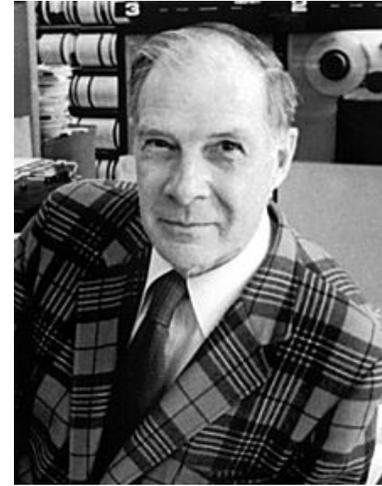
Integrity in Research

- Check the second part in "[PhD Research: Elements of Excellence](#)" by Prof. Ness B. Shroff at The Ohio State University



“You and Your Research”

- Dr. Richard Hamming, Bell Labs, 1986
- How to do great (first-class) work
 - Not just luck, it's prepared mind
 - Work 10% harder
 - Emotional commitment
 - Work on important problems
 - Alter problems
 - Sell your work



“Four Golden Lessons”

- Steven Weinberg, *Nature*, 2003
- No one knows everything, and you don't have to
- Go for the mess – that's where the action is
- Forgive yourself for wasting time
- Learn something about the history of science

