CSE 591 Class 1

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Framing Discussion: the Research Life Cycle

What is research?

- One possible response: it's the means by which we create *significant new* knowledge in a *community*
- **Significant?** It's knowledge with an impact!
- clarifies or changes our understanding of the world; makes it possible to do things that couldn't be done before; causes others to use our results or investigate the same questions
- **New?** It was not known (or understood, or done) before!
- Novelty includes applying old ideas to a new field, or new ideas to an old field. It includes showing empirically that something is a good or bad idea.
- **Community?** Could be
  - Your local peers (research group)
  - Other people working on similar kinds of problems (research area)
  - People who need to apply your findings (users)
  - People who don't use your work but do judge you (funders, reviewers, Congress, New York Times, etc)
- To the extent that a research project meets these ideals, we say that it is *high-impact*.
- To the extent that it fails to be significant, even if new, we say that it is *irrelevant* or *incremental*.
- To the extent that it fails to be novel, we say that it is *duplicative* or *derivative*.
- (And of course, it must be well-communicated.)

So how does research get done?

- Here's a too-simple linear progression:

1. Understand the state of your problem.
2. Conceive of an idea.
3. Develop a proposal to support the idea.
4. Do the work.
5. Communicate the results.

- In fact, a real research program constantly shifts among these tasks.
- They may be divided among many individuals in a research group.
- A Ph.D. is about learning to navigate this process, which you will do again and again in life.

In 591 class sessions, we'll have discussions of 1-3 and 5. Actually doing the work is the subject of your rotations!