Doing Graduate Research in Software Engineering@CSU: Expectations, Challenges, Pitfalls
Expectations

• As a research student you are expected to:
  – Develop a deep understanding of the research domain that you work in
    • Requires going beyond course work
    • Requires doing a detailed literature review and analysis
    • Requires keeping close track of developments in the domain through reading of current and recent conference and journal papers
  – Identify and scope a meaningful problem that will be the target of your research effort
  – Come up with innovative solutions to the target problem
  – Rigorously evaluate the solutions
    • Use success criteria to gauge effort
    • Build tools
    • Design and perform evaluation studies
Challenges

• Developing good analytical skills
  – analyzing existing body of knowledge as described in published papers

• Developing good writing skills
  – Learn to be your own worst critic
    • Do not rely on adviser/reviewer to give you detailed feedback on your writing
  – What you write reflects on you, your advisers and your institution

• Developing good presentation skills
Pitfalls

• Under-estimating the effort needed to produce a good thesis
  – Thesis writing should be an iterative, incremental process: Don’t wait to get all the research done before starting to write
  – Estimate going through at least five iterative rounds of the write/review-by-adviser/change process for each chapter

• Under-estimating the need and effort to develop tools
  – A prototype tool
    • can help you demonstrate feasibility and practicality of ideas
    • can make rigorous evaluation of research results feasible

• Under-estimating the need to publish papers in good conferences and journals before graduation
  – Provides external validation of your work prior to your defense
  – Significantly enhances your marketability
Preparing for a research career

Your adviser can help prepare you for a research career by doing the following (over and above advise on your thesis topic)

• Giving you workshop or conference papers to review
  – To help you develop analytical skills
  – To help you keep abreast of developments in the field

• Giving you the opportunity to attend conferences
  – To help you develop contacts in the community that may be useful before and after you graduate

• Giving you the opportunity to present your work within and outside the research group
  – To help you develop your presentation skills

• Giving you the opportunity to visit researchers at other institutions
  – To develop broader view of how research is conducted
Research Group Meetings

Different types of SE research group meetings

• Student status meetings
  – Each student will give a 5 minute overview of the progress they’ve made since the last status meeting
  – Meetings will be held regularly (current plan is for monthly meetings)
  – Makes students aware of what other students are doing and can help identify opportunities for collaboration

• Student paper/research presentations
  – A student presents a paper or some aspect of his/her research

• Roundtable paper discussion
  – A selected paper is discussed; each attendee gives his/her perspective on the contents of the paper
  – Requires that all attendees read the paper before the meeting

• Presentations on research projects and opportunities by advisers

• Presentations from visitors
Useful information

- SE Wiki: [https://www.cs.colostate.edu/wiki/Software_Engineering](https://www.cs.colostate.edu/wiki/Software_Engineering)
- SE group mailing list: [segroup@cs.colostate.edu](mailto:segroup@cs.colostate.edu)
  - To be added to the mailing list contact Dr. Sudipto Ghosh ([ghosh@cs.colostate.edu](mailto:ghosh@cs.colostate.edu))
- Shared area directory: /s/bach/h/proj/puml
  - Contains documents that are shared within the group, e.g., latest OMG standards, theses, papers
  - To get access contact Dr. Robert France ([france@cs.colostate.edu](mailto:france@cs.colostate.edu))