COMPUTER SCIENCE RESEARCH PRACTICUM

UNM CS 600

Fall Term, 2016
Fri. 11:00 - 1:00, arranged
Science Math Learning Center 352

Professor: Stephanie Forrest

Office: Travelstead B-13
Phone: 277-7104 (during office hours only)
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Office Hours: Wed. 2:00 - 3:00, Thu. 2:00 - 4:00 (or by appointment)

Textbook:

The Craft of Resarch W. C. Booth, G. C. Colomb, and J. .M. Williams, Univ. of Chicago Press. Paperback 2008.

Selected Readings.

Course Description:

The Practicum helps students develop and practice the skills required to conduct an independent research project. It is intended for graduate students pursuing a Ph.D in computer science. Students will select a subject area advisor for the Ph.D. milestone project during the first two weeks of the semester. The Practicum provides intensive supervision for one semester, in collaboration with the subject area advisor, as the student develops his or her milestone project and begins to research it. It is expected that by the end of the semester, students will have acquired the necessary knowledge to conduct independent research and complete the research milestone within the required time period. They will also have selected a project, conducted a literature review, begun conducting the research, and have written a paper outlining their progress.

Course Assignments and Grading:

Grades will be assigned as follows:

- Selecting a subject area advisor (5% of grade)
- Successfully proposing and presenting a research project (10% of grade)
- Literature review (10% of grade)
- Research project, final written and oral report (50% of grade)
- Class participation (25% of grade)

Collaboration, online help and academic honesty

Research is often a collaborative endeavor, but in this class you are expected to conduct research independently and hand in only your own work, unless explicitly directed otherwise. Students are encouraged to help each other with concepts from class, discuss the assigned readings ahead of time, and to review other students' work as assigned, but they are not allowed to copy any part of another students' code or writing. You are responsible for documenting and citing the sources for all code, ideas, figures and text that you do not produce yourself, for example, open source code that you use in one of your programs. If you end up collaborating with another student, the details of the collaboration must be documented carefully. Any student caught copying materials from any source and presenting it as his or her own will, at least, be failed and reported to the University for cheating. Any student who is unclear whether something is 'cheating' should ask the instructor.

Course Topics

Course overview
What is research?
Research proposals
    Heilmeyr Catechism
Academic writing
Assigning credit for scientific work
    Literature reviews and citations
    Authorship
    Academic honesty and integrity
    Case studies
Evaluation of results
Reproducibility of results
    Preserving research artifacts
    Lab notebooks
    Replicating results
    Data analysis case studies
Collaboration

Schedule

Weeks 1 - 2

Write 1/2 page: What are you passionate about? Why?
Find a subject area advisor
Identify a general topic area

Weeks 3 - 4

Identify a research topic
Write 1/2 page: Summary of research topic
Conduct an initial literature review
Oral presentations

Weeks 5 - 6

Three-way meetings (student, subject-area advisor, instructor)
Refine the research topic
Write a 2-3 page project proposal
    Include literature review
Initiate research

Weeks 7 - 10

Define a 'fail early' experiment
Oral presentations and critiques

Weeks 11 - 14

Intermediate progress reports due
Three-way meetings (student, subject-area advisor, instructor)
Begin final paper

Weeks 15 - 18

Write 8-10 page paper summarizing results and future directions
Prepare and deliver short oral presentation of preliminary research findings