CS Department Masters Thesis Policy

Purpose

This policy governs content and advisors of masters theses, in fulfillment of masters degree requirements in the CS Department's Computer Science and Software Engineering curricula.

Content and Scope

A masters thesis in a curriculum administered by the CS Department must address a computer science problem relevant to the Department of Defense (DoD), the Department of the Navy (DoN), or a student's sponsoring organization or government. A thesis may be an individual project leading to an original and validated contribution to theory or practice, or a group project focused on a problem of interest to the CS program Major Area Sponsor (MAS) or other DoD/DoN stakeholders, and leading to a deliverable report or system.

1. Thesis Topic:
   a. Within the above constraints, students may choose any suitable thesis topic that interests them. There are, however, two important potential exceptions:
      i. The supervisor of students who are NPS research assistants or research associates may specify allowable topics, and oversee advisor selection, consistent with the objectives of the grant for which the student is working.
      ii. An external agency sponsoring a student may specify allowable research topics and advisors for that student.
   b. Thesis topics will be described in the Thesis Proposal, as mutually agreed upon by the student(s) and advisor(s). Proposals will be reviewed by the Academic Associate and Program Officer, and approved by the Department Chair. Proposals must be submitted no later than the end of the third academic quarter (Qtr-3, not counting the refresher quarter Qtr-0), regardless of the length of the program. Programs subject to 1.a (i or ii) may require additional reviews and approvals.
   c. All students are automatically enrolled in CS4900 in their second academic quarter. CS4900 introduces students to the research interests of the faculty, in order to help them select topics, advisors, and cross-area collaborators.
   d. All students are automatically enrolled in CS4901 in their third academic quarter, to support them in the execution of their thesis plan. Topics in CS4901 cover research structure, requirements for literature and prior work, proper grounding of claims, gathering and organizing complex information, and writing clear, concise, and precise prose. It is a requirement of this course that students complete the NPS IRB training and complete their thesis proposal.
   e. The final thesis report must contain an explicit section or chapter describing the benefits of the thesis research to the DoN, DoD, or other relevant stakeholders. DoN students must, at a minimum, discuss benefits of their work to the DoN.
   f. Interdisciplinary Work. The Department strongly encourages theses that cross into other academic disciplines. Students are encouraged to seek out topics and co-advisors or second readers from other NPS departments provided all CS thesis requirements are met.
2. Individual Thesis Projects:
   An individual thesis must deliver validated, defense-relevant computer science results. Valuable results can take various forms, including:
   • Development and validation of models
   • Development and validation of computer programs as tools
   • Mathematical derivations and proofs
   • Statistical and experimental studies
   • Simulation studies
   • Solution of a real-world problem
3. Joint theses:
   Two students may collaborate on a joint thesis. Each person must make an identifiable contribution that would qualify as a masters thesis on its own, and the two of them must contribute to a result that one alone could not have made. The thesis introduction should clearly identify the contributions of each author.

4. Group Thesis Projects:
    a. Group thesis projects are studies by teams of typically 3-5 students. The scope of a group thesis project should be big enough to require a team, and should involve the integration of operational concepts and systems. The proposal for a group thesis must clearly delineate the expected roles and contributions of each group member. The advisor will work with the group to develop roles and responsibilities, teach and foster group dynamics, and lead and evaluate students based on individual contributions to the project.
    b. A goal of the group thesis project is to allow students to learn skills and gain experience in the group development process, while working on sponsor-driven, operationally relevant problems.
    c. As the project proceeds, the advisor should conduct interim evaluations of the group members, possibly incorporating peer reviews, as a way to provide feedback on individual contributions. When it is determined by the advisor(s) and group that a student member is no longer contributing to the greater whole of the project, the advisor will counsel this student appropriately, and if necessary may remove the student from the group. In these cases, the student must complete an individual thesis to meet degree requirements.
    d. There must be a final demonstration of a group thesis project (e.g., brown bag lecture) at the end of the student group's final quarter. All CS faulty and students and pertinent external project sponsors should be invited to attend.

Advisors

1. Students will select thesis advisors with suitable expertise and interest in their research topic area prior to submitting a formal proposal. Students will work with their advisors to develop a thesis proposal that includes research goals, problem statement, background research, timeline, travel requirements, and expected results.

2. All CS-department theses will be advised by a committee configured as follows:
    a. Advisor and second reader, or
    b. Advisor and co-advisor.
    Additional committee members are permitted and will be designated second readers.

3. Acceptable masters thesis committee members will meet the following requirements:

    Advisor: must be a PhD holding faculty member assigned to the CS Department or MOVES Institute. In cases where either or both of these requirements are not met by the advisor, a co-advisor must be assigned who fulfills the lacking requirement(s).

    Co-Advisor: may be any member of the NPS faculty, including visiting scholars, post-doctoral scholars and adjunct faculty.

    Second Reader: may be any member of the NPS faculty. Representatives of a student's research or other sponsoring agency, or the supervisor of a DL student, may serve in this role.

4. Students conducting interdisciplinary research must select faculty from other represented departments, as appropriate, to act as co-advisors or second readers. Faculty from other departments may not serve as the primary advisor on a CS thesis.

Exceptions

The CS Department Chair may make exceptions to this policy on a case-by-case basis. Requests for exceptions should be justified in the thesis proposal. Approval of the proposal approves the exception.