Computer Science Qualifying Exam
Updated Spring 2024

Goal of the Exam: Assess, as much as is possible, whether the student has the capability and aptitude to do independent, PhD-level work

Process – Track I (Original Published Research)
1. Student notifies Graduate Program Director (via webform) of intent to take Qualifying Exam and submits published paper no later than **4:30 PM on the day grades are due for the prior semester** (Spring 2024 – Dec. 19)
2. Advisor will invite 3 committee members (The Qualifying Exam Committee)
3. The oral presentations will all be scheduled together mid-way through the semester (exact date TBA).

Deliverables – Track I (Original Published Research)
1. Paper
   a. The paper must be published in a reputable, peer-reviewed conference or journal, as verified by the student's advisor
   b. The paper must demonstrate the student's ability to do independent research
   c. The student must either be the sole author or be the lead author and have contributed 75% or more of the work in the paper, as verified by the student's advisor
   d. Along with the paper, the student must submit a document describing, in detail, how they contributed to each aspect of the paper (e.g., research design, methods, data collection, data analysis, and discussion)
2. Presentation
   a. The presentation should demonstrate the depth of the student's knowledge about the research area, the methods used, the results, and the implications
   b. The presentation will be 15 minutes + 15 minutes for questions, ensuring that each committee member is allowed to ask at least one question
   a. The student should be prepared for questions designed to evaluate the student's knowledge of the research described in the paper

Process – Track II (Review paper)
1. Student notifies Graduate Program Director (via webform) of intent to take Qualifying Exam no later than **4:30 PM on the day grades are due for the prior semester** (Spring 2024 – Dec. 19).
2. Advisor will identify the topic for the Qualifying Exam and invite 3 committee members (The Qualifying Exam Committee).
   a. The advisor cannot discuss the selected topic with the student before the exam begins.
   b. The topic can be tangential to the student's dissertation topic, but it cannot be the same topic, nor a topic for which the student has already conducted research. The advisor can provide a paper as a starting point or just a topic.
   c. While the student will not yet know the topic for the Qualifying Exam, they can provide input to the advisor when selecting the committee.
3. The Advisor sends the Qualifying Exam topic to Graduate Program Director, no later than **4:30 PM on the Friday immediately after classes begin** (Spring 2024 – Jan. 12).

4. The Graduate Program Director will send the topic to the student at **9 AM on the Monday of the first full week of the semester** (Spring 2024 – Jan. 16[1]).

5. The Graduate Program Director will have a required group meeting with all students taking the exam at the beginning of the exam period (exact date TBA).

6. Student has 3 weeks to search the literature about the topic and synthesize the findings.
   a. It will be the student's responsibility, in consultation with their advisor, to scope the topic up or down as necessary based upon the available literature
   b. While the work must be the student's own, *they should frequently interact with their advisor* throughout the three-week period.

7. Student submits the document to the Graduate Program Director no later than **4:30 PM on the Friday at the end of the 3-week period** (Spring 2024 – Feb. 2).

8. The oral presentations will all be scheduled together mid-way through the semester (exact date TBA).

Deliverables - Track II (Review Paper)

1. Paper
   a. Includes a literature review that gives strong consideration to the current state of the topic
   b. Describes a potential future research direction related to the given topic, motivate why that direction is important, and provide a plan pursuing that research direction
   c. Focuses on the fundamentals, theory, and algorithmic approaches of the topic area rather than only providing a cursory overview of the topic
   d. The research plan should
      i. Identify one or more open research questions based on the synthesis of the literature
      ii. Propose a research plan for answering one of the research questions identified above, including information like the potential research methods to be used, the data to be gathered, the analysis to be conducted, and the tools to be built, as appropriate
      iii. Comprise approximately 25% of the submitted document
   e. The document must be 4-8 pages using IEEE Conference format (not including references)
   f. Track II Papers must allow the faculty to judge the student's ability to do PhD work as described above
   g. Neither the student's advisor nor their committee can modify these rules

2. Presentation
   a. Upon successful completion of the Paper, the student will give a presentation to the faculty and graduate students
   b. The presentation will be 15 minutes + 15 minutes for questions, ensuring that each committee member is allowed to ask at least one question
   c. The student should be prepared for general questions of a theoretical nature

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[1] Jan. 15, 2024 is a holiday

Evaluation Process - student must pass both the Paper and the Presentation

1. Paper
    a. Graduate Committee reviews the paper to ensure it meets the guidelines defined above. If the Graduate Committee determines the paper does not meet the guidelines, they can issue a Fail prior to sending the paper to the student's Qualifying Exam committee
    b. Once the Graduate Committee has reviewed the paper, it will go to the student's Qualifying Exam committee, whose members will have 1 week to evaluate the paper
    c. The Qualifying Exam committee members' evaluation is based upon their assessment of whether the student can do independent PhD-level work.
    d. Paper receives a Pass or Fail from the Qualifying Exam committee
        i. Each committee member will communicate their Pass/Fail vote to the student's Advisor.
        ii. Prior to voting, the Qualifying Exam committee can optionally meet and discuss the contents of the paper.
        iii. Along with the Pass/Fail vote, each committee member can optionally send in questions they would like to see the student address during their presentation. The Advisor will share these questions with the student.
        iv. The paper must receive at least 3 Pass votes to be successful
    e. There is no expectation that the paper is publishable "as-is". A student can work with their advisor after the exam to expand the paper into a publishable manuscript.

2. Presentation
    a. Evaluation is based upon the faculty's belief that the student can do independent PhD-level work.
    b. Committee members (and other faculty members) should focus their questions on trying to determine how well the student understands their topic area and how well they can explain potential future research directions
    c. All faculty in attendance during the presentation will vote either Pass or Fail. To be successful, the student must receive more than 50% Pass votes