PhD Qualifying Exam
Effective Fall 2020

1. Purpose
Each doctoral student must satisfy the PhD qualifying requirement, which consists a written document either describing original research (Track 1) or surveying a particular research area (Track 2) that is accompanied by a public oral presentation. The purpose of the qualifying exam is to allow the faculty to assess the PhD student’s ability to conduct PhD-level research in Computer Science. The written document and oral presentation allow the faculty to examine how well the PhD student understands key ideas and is able to discuss those ideas in a question and answer session.

2. Qualifying Exam Options
PhD students, in consultation with their advisor, can choose one of the following options for completing their qualifying exam.

2.1 Track 1 - Student submits and presents a published peer-reviewed paper
This track is for students who have already been successful in publishing a research paper, while at UA, in a peer-reviewed venue.

Written Document
The chosen paper has to meet the following conditions:
1. The student's advisor has to approve the paper and confirm that it is published in a high-quality, peer-reviewed venue.
2. The student has to be the lead author and advisor (or other co-authors) must certify that the student did the large majority of the work in the paper.
3. The student will submit the paper to their committee as the written document.
Because the paper has already been accepted in a high-quality, peer-reviewed venue, the student’s committee will not conduct an evaluation of the paper itself.

Oral Presentation
The student will be required to deliver a 20-minutes conference-style presentation of the research contained in the paper. The committee members will then have 20 minutes to question the student regarding the contents of the paper and presentation to ensure the student is able to adequately communicate the research and answer questions about it. The presentation and subsequent question/answer session will be the primary factor in evaluating the success of the qualifying exam.

The committee will then assign the student a score of either Pass or Fail based on the student’s presentation of the paper and ability to answer questions about the research.
2.2 Track 2 - Student conducts a literature review

This track is for students who have not yet been successful in publishing a paper in a peer-reviewed venue. In this case, the student will prepare a publication-quality literature review on a topic relevant to the student's anticipated PhD research.

Written Document

The following is expected of the written document:

1. The student must demonstrate an ability to search the literature for additional relevant papers, summarize important findings, and understand a related set of research papers.
2. The document should provide a clear explanation of basic definitions and motivate the importance of the topic.
3. The document should also provide all of the necessary background so that a non-expert in the area (e.g., a faculty member who works in a different area of research) can understand the report and presentation.
4. The document should not be an annotated bibliography of the literature, but should draw some conclusions or make observations that could not be made from the individual papers.
5. The document should identify standard techniques, measures and metrics.
6. The document should identify the contributions of a paper and how these contributions helped to advance the field (e.g. countered or disproved previously held thoughts in the area).
7. In the document solved problems should be distinguished from unsolved problems, as well as limitations associated with any existing practices within the field.
8. The document should be written in a manner that makes an intellectual contribution by identifying gaps of knowledge and potential areas for new inquiry that is based on a critical analysis of the related literature.
9. The discussion and comparison of the collective body of literature in a specific area should lead to some insights into new topics for future investigation.

The written document will be evaluated as follows:

1. The Graduate Director will run a plagiarism check on the submitted document.
2. The Graduate Director and Department Head will review each submitted paper to ensure it is complete and passes a minimum standard (relative to the evaluation rubric). Any paper that does not meet the standard will result in a failed qualifying exam.
3. If the paper passes the initial screening, it will then be sent to the committee for review.
4. The committee will be given 2 weeks to review the document.
5. Each committee member will rate the paper as either Fail, Needs Modification, or Pass
   - Fail - The paper is not up to our standards. The student fails the exam without a presentation.
   - Needs Modification – The paper needs minor modifications. The student will have 1 week to update the paper based on the committee’s comments. The committee will review the modified paper and assign it a Pass or Fail.
   - Pass – The paper does not need further modifications.

Oral Presentation

Once a student's paper has received a score of Pass from the committee, the student can proceed to the oral presentation phase. The student will present a 20-minute discussion of the work contained in the paper. The committee and other faculty will have 20-minutes to ask the student detailed questions about the papers included in the review along with the student's synthesis of those papers.
The committee will assign the student a Pass or Fail for the exam.

3. Process

To ensure quality and consistency across all qualifying exams, we will use the following process:

1. Papers are due to the Graduate Director on the 1st day of class.
2. The Graduate Director will schedule all qualifying exams to occur together in the same session (or multiple sessions if there are a large number of exams).
3. Each student will be allocated 40 minutes (20 for the presentation and 20 for questions).
4. All faculty in attendance will remain after the last presentation to deliberate and make decisions on all exams.
5. To pass, the student must receive a positive vote from 2/3 of the faculty who vote.