Qualifying Process

The qualification process consists of two parts:

1. Curriculum Requirement

The student is required to complete three courses in two core areas (Theories and Systems) and receive at least two A grades and one B grade in these courses to meet the curriculum requirement of the qualifying process. Timeline: A typical student (one who is admitted to the Ph.D. program with very few foundation courses to take) is expected to qualify by the end of the third semester (excluding summers) after admission.

2. Research Examination

The objective of the research examination is to assess the student's potential to begin doctoral-level research. The examination will assess the student's abilities to read and understand research papers in their field; formulate a problem clearly and provide the motivation and requirements for a solution; determine if a solution is correct; assess to what extent a presumably correct solution solves the problem; clearly identify potential next research problems and provide solutions; communicate effectively both in writing and orally; and answer questions related to the problem and its solutions.

The student will request the research examination in one of the following areas of computer science: Artificial Intelligence, Bioinformatics and Computational Biology, Database and Data Mining, Graphics and Visual Computing, Networks and Distributed Systems, Numerical and Scientific Computing, Security and Privacy, Software Engineering, and Theoretical Foundations.

A committee of 3 faculty members will choose 2 research papers and assign to the student. The chosen papers are preferably to be published in the recent 4 years in top-tier journals such as ACM/IEEE Transactions related to the subject area. Paper 1 is the key paper. Paper 2 should be related to Paper 1. Paper 2 could be from flagship conferences, but not necessary to be published in the recent 4 years.

The student has at least 2 months to prepare a paper review written report. An oral defense will be scheduled, in which there will be general questioning by the committee. The written report needs to be submitted to the committee at least one week prior to the oral defense.

The result of the research exam is PASS/FAIL. A student who receives a FAIL in the first attempt will be given a second and final attempt. In the second attempt, at least 1 new committee member will replace a committee member in the first attempt, and the student's advisor's performance evaluation of the student will be considered.

Suggestions for paper review report:

1. The length of the report should be 3-10 pages. The report must be sent to the committee at least 1 week prior to the presentation.
2. The report should provide the following information:
    a. For each of the 2 papers, provide the summary of the paper (1 paragraph); key contributions of the paper (1 paragraph/bullet points); brief introduction of the methods and approaches, summary of the evaluation results (1 paragraph/bullet points).
    b. Relationship between the two papers in terms of background knowledge, motivation, goals, contributions, performances, etc.
    c. Derive your own observations and explanations for the proposed solutions and experiment/simulation results in the papers.
    d. Identify shortcomings and future research directions considering the computer science context of the papers.