Data, Information, Knowledge, and Libraries (DIKL) Exam Instructions

The following are instructions for the DIKL qualifying exam. The first page describes the written portion, and the second page describes the oral presentation portion.

Written Exam: You will prepare a scientific paper that addresses the following. The paper should be between 6 and 8 pages, using letter sized paper with 1-inch top, bottom, left, and right margins. Your main text should be 11-point font, single column in either the default TeX font or Times New Roman.

1.) Describe an important problem in a research area relevant to data, information, knowledge, and/or libraries.
    a.) Why is the problem important?
    b.) Why is the problem challenging? What hurdles prevent the problem from having been solved now?
2.) Describe previous and current approaches for solving the problem.
    a.) Discuss the advantages and disadvantages of these approaches.
    b.) Organize similar approaches together to describe their general approach and individual differences.
    c.) What foundational ideas underlie the solution approaches you are covering? Are the methods, theory, or other ideas borrowed from work on related problems that have been studied?
3.) If you were to design a new approach to solve the problem, what are various ways to evaluate success?
    a.) How do existing studies to evaluate success (quantitatively and/or qualitatively)?
    b.) What are the limitations or costs of the evaluation methods? What aspects can these evaluation methods measure and what can they not?

Your response to each of these should be well supported by literature with proper citations. Your submitted document should resemble a professionally prepared survey paper or literature review section of a larger manuscript. You should include figures, tables, pseudocode, or equations as appropriate to clarify your explanations.

Your constructed reading list will serve as your bibliography. Based on this surveying task, you should now adjust your reading list by adding or filtering it as needed to present a complete picture describing a data, information, knowledge, and/or libraries research problem. If you created a new reading list from scratch, have your advisor email Bert Huang with a short message indicating that they approve your reading list.

You will be graded based on the following rubric:
40% for technical writing (clarity, organization, presentation)
40% for demonstration of knowledge on topic area and reading list.
20% for synthesis of connected topics, approaches, or evaluation methods.

Oral Exam: In addition to your written document, you will present a brief 12-minute talk about the problem you have selected. You should present the importance of the problem you are highlighting and the major approaches to solving the problem. We will begin the process of scheduling the presentations during the next week.

After the talk, the committee will ask clarifying questions as well as other questions about topics in the scope of data, information, knowledge, and libraries. These oral questions may be unrelated to your chosen topic, as they will assess your general knowledge about the area.

For the oral presentation, you will be graded with the following rubric:

33% for presentation quality (clarity of presentation, effectiveness of visuals)
33% for technical content (motivating the problem and explaining the solutions and evaluations)
33% for question-answering (competent response to questions)

Logistics: You must turn in your written portion electronically no later than Friday, January 18, 2019, 6pm EST. Despite the breakdown of individual points in each question, your solutions should be structured as a scientific paper, with an introduction and conclusion, sufficient coverage of prior art, and coherent overall flow.

The written solution (in PDF format) should be emailed to Prof. Bert Huang at bhuang@vt.edu. It is your responsibility to ensure that usable files are received on time; please include your name and contact information in your messages and files.

The Virginia Tech Honor Code is in effect for the duration of the exam. The work that you turn in must be your own; collaboration with others or communication related to the exam is not permitted. Please see: http://ghs.grads.vt.edu/.

Late Submission Policy: A penalty of 30% will be deducted from your score for the first 24-hour period if your submission is late. A penalty of 70% will be deducted from your score for >= 24-hour period. Solutions submitted more than 3 days late will not be assessed and will score as a zero (0). Weekend days will be counted.