

CSC 450, Senior Research Research Proposal

The purpose of a **research proposal** is to convince a funding agency or organization to support the proposed research by providing money, resources, and time, instead of supporting other possible research projects.

In your proposal, you must persuade the reader that the research (1) addresses an important question/issue and is therefore *significant* or *necessary*, and (2) can successfully be carried out by the individual(s) proposing it. In order to accomplish (2) you will need to provide methodological details that show that you've clearly thought through how to carry out your work. Also note that your proposed work (like most research) will not necessarily be "high-impact". However, your proposal should explain to the reader why your project is important.

If your proposal is a **group project**, you will submit a single proposal, which will describe how the work will be divided between team members and that separately addresses each person's qualifications for the work.

Your proposal should contain the following sections: Abstract, Background and Significance, Methodology, Statement of Qualification, Expected Outcomes, and Bibliography. Your proposal will be evaluated using the rubric on the following page and will be graded out of 100 points.

Notes for rubric on following page:

¹Objective: your objective should be to develop a new method, algorithm, or tool, or to answer a specific question (e.g., determine if Method 1 is faster than Method 2).

The proposal must be submitted through Blackboard before the due date to receive credit. If working in a group, only one person from your group should submit the proposal.

Note: While ideally your research project will follow what is in your proposal, this often does not happen in practice. Once your proposal is submitted, I will meet with you to discuss your next steps.

Abstract**/ 15 points**

- A clear and concise summary of the proposal is presented in a clear manner
- The background, significance, objective, and methodology are summarized
- The abstract is limited to no more than 150 words

Background / Significance**/ 30 points**

- A clearly labeled subsection (*Significance*) describing the project's significance is presented in a clear and organized manner, that
 - explains why the research topic is important for its field and for society as a whole
 - clearly states the objective of the project, which should be to develop a new method, algorithm, or tool; or to answer a specific question (e.g., to determine if Method 1 is faster than Method 2).
- A clearly labeled subsection (*Background*) describing the project's background is presented in a clear and organized manner
- A clearly labeled subsection (*Related work*) describing at least 3 research articles related to your proposed project, which provides context for your project (are you building off of a limitation in the field? Are you trying to confirm a similar finding?) These should relate to your *project*, and not just the topic area.
- This section is relatively non-technical and is accessible to an individual with an undergraduate CS degree

Methodology**/ 25 points**

- The methodology that will be used to carry out the project is clearly described
- The methodology is specific, and demonstrates that you've thought ahead about the work to be done
- A timeline is included, which includes
 - general steps for completing the project
 - preparing for and giving a presentation, writing and submitting the final paper
- If working in a group, clearly state how the work will be divided among team members (this can change later on)

Statement of Qualification**/ 15 points**

- The qualifications of the applicant(s) for carrying out the proposed project are clearly described.
- If the research area is new to the individual(s), then broad qualifications may be discussed, providing evidence that the applicant has the ability to learn and to carry out the proposed work.

Expected Outcomes**/ 15 points**

- Expected outcomes are clearly described, and include
 - expected findings (new knowledge) from the research itself,
 - tangible products such as a presentation and a manuscript.

Additional Requirements

- **Title:** The proposal has a descriptive and specific title that accurately describes the proposed project [**5 point deduction if not met**]
- **References:** The paper references at least 6 articles that are appropriately cited in the manuscript and included in the *References* section using IEEE format. References need to be cited in the body of the proposal, and not just appear at the end. [**paper is not acceptable if it contains no citations or references**]
- **Format:** The paper is at least 4 double-spaced pages (not including references), and follows the format of the example proposal. Sections (except the abstract and bibliography) are numbered 1-4, and are in bold, with an extra line between sections. A footer is included that includes your last names, the course and section number, and Fall 2024. Other aspects follow the format of the Lit Review. [**up to 10 point deduction if not met**]
- **Spelling and Grammar:** The paper is well-written and contains few, if any spelling mistakes or grammatical mistakes that detract from the reader's ability to understand the paper [**up to 20 point deduction if not met**]

- *Use of AI.* We will follow the IEEE policy on Author Guidelines for AI-generated text (<https://open.ieee.org/author-guidelines-for-artificial-intelligence-ai-generated-text/>). If you use AI, you should include an Acknowledgements section which documents this.