

## Models and Simulations: Final Project Proposal

**Instructions:** Your research proposal should contain three parts: (1) a statement of the question you wish to address, (2) a plan of how you will address the question, and (3) a conjecture about what you expect to find and why your findings are philosophically important. I will describe each part of the proposal a bit more in depth. There is also a sample proposal, which was written by a previous student, available on the website. Before you start writing your final paper, you should set up a meeting with me to discuss your proposal in person.

In the first section of your proposal, you should state a research question and briefly summarize existing background research that addresses questions similar to yours. What should you include? As a general rule of thumb, you should imagine that your proposal will be read by an educated person who is unfamiliar with your area of research. For instance, imagine you are describing your final project to a professor in a different course.

With that rule of thumb in mind, the background section ought to contain three parts, which may occur in any order. First, you state your general question and motivate its importance. For example, suppose your research question is, “How should scientists evaluate the reliability of experts in different fields?” To motivate the importance of that question, you might want to explain that academics frequently rely on research conducted in other fields, and therefore, it is important to be able to distinguish experts from non-experts.

Next, you should narrow the focus of your question and define all terms that are necessary to understand the more specific question. For example, if your general question is the one above, your (significantly) narrower (and overly complicated) question might be, “If scientists learn through a combination of experience and reports from others, and if they update their beliefs in the reliability of other others by Bayesian conditionalization, do they eventually converge to true opinion?” Now although your reader is educated, he or she may not know the terminology used in your research question. So you should define all terms that would be unfamiliar to the average reader. For example, if you asked the very complicated research question above, then you ought to explain briefly what Bayesian condition-

alization is.

Finally, you should summarize similar existing research and explain how your project is different. Doing so lets the reader know that you are attacking a problem that is really novel. For example, you might say, “In [Citation X], the authors develop a network model in which agents employ classical statistical methods to evaluate the reliability of others. However, their model differs substantially from my model because Y. I will use Bayesian conditionalization for reason Z.”

In the second part of your proposal, you ought to explain how you plan to answer your question. In particular, you ought to describe the model that you will implement and how it can be used to address your question. If you plan to modify an existing model, describe what features of an existing model you will change. If you plan to implement an algorithm (e.g., a particular network formation algorithm) that was written by someone else, you should say so. Finally, after describing your model, you should explain how you plan to analyze and visualize the results (e.g., using particular types of graphs).

In the third and final section of your proposal, you ought to state what you expect to learn from your proposal. For example, you might say, “Result X in [author’s name] model seem to depend critically on assumption Y. When assumption X is dropped, as it is in my model, I expect the following results, which differs significantly from previous findings in way Z.” Do not worry: your conjecture need no be right! However, it is important to explain what you expect your results to be before you have completely implemented your model and run simulations. Think of your final project as an experiment. You may not know exactly what the outcome of your experiment will be, but if you cannot explain what it might tell you about your research question, then why are you running the experiment at all?

Your entire proposal ought to be no longer than four pages in length.