Mechatronics Graduate Seminar
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WRITING RESEARCH PROPOSAL/PAPERS

This handout presents some guidelines on how to prepare a scientific research proposal/paper.

Parts of a Proposal/Manuscript

Title Page

A title should briefly summarize the main idea of the paper, using the actual variables under consideration. An example of a good title is "Effects of Robotics Technology on Performance and Quality of Automotive Industries."

The title page also includes the author's name and institutional affiliation (usually a university). The preferred format for the authors name is to have the first name, middle initial, and then the last name.

Abstract

The abstract is the second page of the manuscript. It is a brief summary the contents of the paper. The abstract should be concise (less than 150 words) and specific. In an empirical study, the abstract should describe the following aspects of the study:

1. The problem under consideration, explained in a single sentence.
2. The participants, specifying important characteristics that are relevant to the variables under consideration.
3. The experimental method, including data gathering procedures.

Introduction

The first part of a paper after the Abstract is the introduction. Since we can all see that it comes first, there is no need to label it as the introduction. You should consider the following points when writing your introduction:

1. Why is this problem important?
2. How do the hypothesis and the experimental design relate to the problem?
3. What are the theoretical applications to the study and how will the study relate to previous work in the area?

The first part of the introduction should develop the background for your research. This means a review of the relevant literature. It is part of your duty as a scientist

to accurately cite relevant earlier works from which you draw information. The big idea is to provide the reader with a background in your topic and introduce your specific problem. Start out talking about your topic generally, and then funnel your discussion down to the specific issue you will deal with.

The second part of the introduction is a statement of the purpose and rationale for your research. Here you will explain your approach to solving the problem you introduced earlier.

What variables do you plan to manipulate? What results do you expect, and why do you expect them? Why did you expect them?

Method

The method section describes in detail how the study will be conducted. This will allow the reader to assess the reliability and validity of your results. It is conventional to divide the methods section into subsections. These subsections usually include a description of the participants and sampling techniques to be employed, materials, and the procedure.

Results

Since this is a proposal, you will not have any results yet. Instead, use this section to detail how you will analyze your data and present your findings. What descriptive statistics will be employed to explain what variables? What inferential (conclusive) methods will be employed? Will tests for reliability and validity be employed?

References

Start your reference list on a new page. Citing References in the Text is highly recommended, since scientific research requires frequent reference to the works of others.