Computer Electronics & Graphics Technology
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Capstone Project Problem Statements: Ensuring Your Work is Relevant

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Introduction

A problem needs to be relevant otherwise it is not worth your time and effort. We ensure relevance by understanding how the problem enhances our own knowledge as well as furthers the knowledge /ability of those around us.

Over the course of your career (including in your capstone courses) you will have to defend what you spend your time doing. In order to convince others that my work serves a worthy end I have adopted the basic fill-in-the-blank structure [1] for problem statements below:

[1] Booth, Colomb, Williams *The Craft of Research, Third Edition*, University of Chicago Press, May 15, 2009.

1. I am studying/designing:

2. because I want to provide/find out what/why/how:

3. in order to help my reader/customer understand or improve:

You may not always choose to keep the statement in this run-on format and strict adherence to the word choice above is not necessary. However, if you can fill in all of these blanks you will gain a clear understanding of how your project relates to the needs of others. Keep your answers in mind as you prepare everything you do during the design, evaluation, and documentation of your projects.

Some Examples

I have used this structure for everything from publishing research to writing emails to my customer or manager. Here are some examples of how I filled in the blanks for three cases.

The first example was related to a number of research papers I published.

I am studying dynamic models of passenger vehicles because I want to find out how to prevent vehicle rollover in order to help car manufacturers reduce road deaths caused by vehicle roll over

Notice that the statements get broader in scope the further into the sentence you read. First, start with a specific thing you are designing or studying. Next, describe what you will gain by studying it. Finally, identify who should care about your findings or product and how it will help them.

Let's look at another example. Moving away from research, this example relates to something you might do while working in industry.

> I am designing fault detection logic because I want to improve the behavior of the fuel controller during a failure in order to help turbine engine manufacturers prevent irreparable damage to the engine

Notice the pattern again. Start specific and become more general. Also, note that in both examples the consumers of the work (car and turbine engine manufacturers) are identified in the third blank.

Often you'll be studying the designs of others and communicating with colleagues about your findings.

> I am studying the signal conditioning circuit because I want to find out why it is inaccurate when the signal contains a frequency of 42kHz in order to explain to my management why the product does not comply with the specification.

In each case, whether I was publishing research or simply writing an email to my manager, having a clear idea about what I was doing and why I was doing it made it easy to write clearly about my work.