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Professional self-assessment

ECE 480
November 26th 2014
1. Throughout the course as an individual and along with my teammates I had to prepare several different forms of technical communication. Below I will briefly go over each type and its purpose.

- Proposal/Pre-proposal: A proposal is a document explaining a customer’s needs and how you, as an individual, group, or company, are able to meet those needs. A proposal may be directed at a superior within a company or at another company wanting to contract out some business. A proposal generally contains sections detailing the customer’s needs, background on the problem and the ways others have solved it, a list of constraints that the design must satisfy, various conceptual approaches to the problem, a proposed solution to the problem, the risks associated with said solution, how the project will be managed, and the cost of the project. Pre-proposal is just an abridged version of a proposal, covering the same areas but in less detail.

- Design issues paper: A design issues paper looks not only on the functional aspects of a solution but the bigger picture. It is a paper describing issues such as product lifecycle management (PLM) or protection of intellectual property. PLM is a framework for the entire lifecycle of a project starting from raw materials, where they will come from and what will they cost. A PLM then looks at the production and the use of a product, how much energy will be needed to manufacture it and how much will it consume once it is manufactured. Finally a PLM looks at the end of a products life, how long will it be useful and when it is not how will it be replaced, upgraded, or disposed of.
Final report: The final report details all aspects of a completed project. A typical technical report starts with a summary of what the project entailed. It then goes into detail about each aspect of the project. Typical sections include background, approach to the solution, a technical description of the solution, data associated with the testing of the solution, cost, and conclusion. A report may also contain other main sections or appendices as needed by the specific report. A final report communicates to others the details of a project.

This course has given me ample experience in writing technical documents. I was largely involved in all of the technical documents that our team produced. I have always viewed myself as a decent writer but writing technical documents presented a different kind of challenge. Writing to communicate facts and explain a technical project required a different approach and I now have a much more firm grasp on this approach than before ECE 480.

The proposal was a unique challenge for me and the rest of my teammates. As a piece of technical writing aimed at securing funds for our project, it was unlike any other piece of writing we’ve produced in the past. I wrote a significant portion of the proposal and ultimately learned, with the help of our facilitator, what it takes to write a proposal that will receive approval.

Through the oral presentations that we had to prepare for this course, I learned how to convey information about a project to a group of people who are technically competent but have not been a part of the project in any way. The presentations taught me how to convey the important information about our progress without going into a lot of unnecessary detail.

Throughout the design process for our smart camera system it became very apparent that precision was important. We had to identify early on where the variations in our design were and how to control them so that our design would deliver a value that was within the specifications. It
was also very important that our solution be robust and reliable. Making it robust was best accomplished by making a system that interacted with as few other mechanical elements as possible while still being able to deliver an accurate measurement.

The engineering design process was something that I already had experience with before taking this class but never at this level of meticulous scrutiny. There were a lot of documents and assignments that were additions to the actual designing of the product. It made the completion of the design significantly more difficult as the surrounding assignments took a significant amount of time away from design progress on the actual product. It gave me exposure to the challenges surrounding the design of a product in a corporate environment.

Many lectures in this class were focused on industry and common practices in corporate problem solving. Although most of them did not pertain to our project in particular, they gave me an understanding of how things might work in an industrial setting.

There are many common tools used by electrical engineers in solving problems. Our project however dealt almost entirely with computer engineering or computer science. For a large amount of the semester we as a group were trying to understand what programming we needed to in order to complete the project. And as such spent very little time learning and applying electrical engineering design tools.

An effective team is a team that is able to communicate and work together effectively while having very different approaches and skill sets. A team obviously has more manpower than an individual but for this increased manpower to result in increased output, the team needs to be able to communicate effectively and each team member needs to accomplish their responsibilities. Working with my 480 team has helped me to see firsthand the advantages and disadvantages of a design team.
In order to accomplish my responsibilities as a group member I had to effectively interpret instructional material and common standards surrounding the use of an IP camera. I was able to effectively understand and manipulate the standards of Ethernet communication and power over Ethernet.

The project that we were assigned was defined in a large part by our sponsor and throughout the semester that turned out to be a challenge. The camera that was selected for us was not an ideal form of camera to accomplish our goal. In order to get the camera to interact with any software that we could write we had to work around the fact that the camera simply was not designed to. I, along with some of my teammates, spent a great deal of time searching the internet for possible solutions to this problem. We ended up employing some third party software that made a solution for the incompatibility more feasible.

2. I’ve had many different roles in the project over the semester and each one has been ever evolving. My first task was setting up the network in which the IP camera communicated with our laptop. This required connecting the camera through a power over Ethernet switch, installing the necessary software on the laptop, and adjusting network settings in Windows so that the camera was allowed to communicate with the software. I was next responsible for getting Matlab onto our dedicated computer so that we could do testing, this was not hard to do but it then became apparent that the computer that we had originally was not powerful enough for our application. Since then I have not written any of the base blocks of code but have assisted in de-bugging code and helping different portions of it communicate so that we have one cohesive program.

3. Throughout the semester I have also been responsible for many non-technical items. I wrote a significant portion of the proposal and the PLM section of the design issues paper that
we submitted as a group. I am also responsible for our team’s website. In addition to the
documents we have submitted as a group, I have also had a significant speaking part in the two
oral presentations that our group gave, the proposal presentation and the technical presentation.

4. My career and professional goals are essentially the same as when I entered this course.
While this course has helped to broaden my view and give me a more realistic picture of
industry, it has not changed my goals overall

5. One of my primary strengths is communication. I have always be comfortable and calm
interacting with many different types of people at many different levels of professional
development. Another skill of mine is willingness to attack any problem. With my diverse work
and life experience I have come across many different types of problems and have realized that
no problem is as scary as it seems, you just have to be willing to try to solve it. One of my
primary weaknesses is willingness to change. If I am generally happy where I am, I have a hard
time justifying a change even if it could be a fruitful change.

6. In 5 years I would like to be working in an engineering position where I am managing a
group of people but still haven’t lost the hands on part of engineering. Whether it is improving
machines or testing prototypes, I would still like to be a hands-on employee. I would also like to
either have already, or be working on getting an MBA by taking night classes in order to further
my career long term.

7. In order to achieve these goals, I will need to first continue to learn as an engineer. I plan
to work at a company where I can work closely with many successful engineers that I can learn
from as my career moves forward. I also plan to continue my education formally by enrolling in
an MBA program, hopefully through the company that I am working for at the time.
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QUALIFICATIONS
. Developed strong knowledge of mechanical systems through practical applications
. Exceptionally strong communication skills
. Persistence in completing projects and solving problems
. Self-directed, flexible, and easily adaptable to new situations, challenges, and technologies
. Ability to work well with people at all levels exhibiting a professional demeanor, appearance, and attitude

EDUCATION
Michigan State University, East Lansing MI | Bachelor of Science in Electrical Engineering
- Cumulative GPA 3.04
- January 2014 Available to start full time
- May 2015 Graduation

Father Gabriel Richard High School, Ann Arbor MI
- Graduated May 2010 National Honor Society GPA 3.42
- Varsity Football and Basketball

WORK EXPERIENCE
Innotec | Engineering Intern
- Ran production as well as improved machines and processes
- Increased mean time between interventions on dust collection system from one to five days
- Improved cell monthly score by completing safety projects each month
- Worked on other projects individually and in groups with other interns and full time engineers
- Made a positive impact in a real world manufacturing environment

Plymouth Super Center | Oil Change Technician
- Performed oil changes and interacted with customers

Two Shovels and a Wheelbarrow | Landscaping
- Built stone pathways, retaining walls, planted and removed trees, bushes, and other plants. Moved mulch, dirt, and rocks.

Maintenance and Small Projects
- Worked on a house construction site doing small projects such as installing sub-floors and installing a fireplace

Computer Repair and Small Projects
- Provided computer repair and performed other miscellaneous repairs such as car repairs, oil changes & tune ups

HOBBIES
1995 F-150 Rebuild
- Pulled transmission and replaced clutch slave cylinder, replaced front ball joints and wheel bearings
- Replaced shocks, brakes and calipers, heater core, water pump, alternator, starter, and parking brake
- Fixed wiring, installed true mechanical gauges

Amateur Circuit Design

References Available Upon Request