ECE480

Professional Self-Assessment

Poyuan Han

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As the senior capstone class, ECE480, it contributes majority of my learning objectives regarding team, course, technical responsibility and project's outcome. The learning experience absolutely help the understanding of electronic in depth. In the beginning of the semester, all students required to have same level of laboratory experiencing on the equipment, designing and testing. Although the lab guides are outdated and incompatible to few current types of equipment, the whole learning process was satisfied and appreciated. The four weeks design labs were pleased and helped me understanding software and hardware as an ECE engineer; the design of color organ, which requires interaction between microcontroller (MSP430G2553) and circuit. Starting the first lab, the color organ design involved in the learning that took me more thinking and implementing. Despite of the time leading the color organ worked, the whole points of the projects would comprehend the understanding of entire lab. In addition, the hardware debugging affects on the time spending on the mini-project. One of the pin on microcontroller were burned out on accident while connecting to the probe, so finding out the where the circuits went wrong took time and, in fact, it is what an electrical engineer should be capable of.

On the course learning point of view, the six sigma was the breathtaking idea how to present the success or failure of a project. Many companies and industries rely on the model to choose the correct project selling in the market. The Six Sigma separates in few segments: define the project, identify the voice of customer (VOC), design and develop according to the VOC, optimize for the Six Sigma and validate the design. Throughout the process of six sigma that I understood, the customer was the primary source to succeed a product. This idea not only assists companies advertising products, but also targets the audience of the team project, sponsors. Unlike the company, the team project only requires to satisfy few people, leading the certain VOC would be. With small amount of customer, the design was able to be modified easily based on the needs. During the semester, the design team had the weekly meeting with the sponsor, knowing the weekly basis goal to be accomplished.

Despite of the Six Sigma, the design process definitely impacted on the learning. In the beginning of the semester, the sponsor gave the goal of the team project; they need a way to more accurately measure the diameter of the steel coil that is on the tension reel at the end of the pickling process. The entire of the design divided into two phase: the learning software and hardware; the only hardware we working with is the Axis Communications P1355-E Network Camera. It is a commercial camera use on surveillance purpose, but it also come with the object tracking and edge dictation feature. As that mention, we propose to use the Axis Communications P1355-Camera to capture a 1080p live video feed of the steel being coiled and a dedicated Windows 7 computer to process the image produced by the Axis camera. The design was complete majority on software. We use Simulink and Matlab for the object detection schematics. Each team member was assigned to the technical responsibility; my role was maintaining the variable input function. I had to take the customer order (video record of coil rotation) from host computer control system and input them as variables into the smart Camera analysis program, and test the software that we design. However there was a one challenge as soon as we receive the record videos from sponsors, the file was store in acsi and acsm format, which is no direct converter into to the common video format, such as avi or mp4. I would have to convert in to asf format, which is the Axis Communication Camera video format, then convert in to avi or mp4 format.

To be the outstanding the electronic engineer, the common characteristic is really sufficient in the
communication, especially in writing and speaking. The team design had three presentations in the semester, two of them were preparation and practice for the Design Day, and one of them is technical presentation. We have done one of the Proposals presentation and the technical presentation so far. Each team was assigned to speak for ten to fifteen minutes in front of the class. The overall outcomes were confidence and well content of slides, but the communicating can be brought up to another level by honing the skills. Moreover, the writing skill is rough and wording is another issue. The improvement of writing can be accomplished by reading more technical papers, professional magazines and weekly journals and practicing the writing on my own.

The capstone not only effected on my learning objectives, but also impacted the career and professional goals. In the last four years being an undergraduate students, an student with limited any professional job, intern, and research experiences, as attached in the Appendix, would struggle when design the software programming. Although the mistakes are allowed as the students, the project, under the time-constrained, may be incomplete by too many errors. Hence, Gaining interns and the entry-level engineering job experience would help me more understanding on problem solving skill. Furthermore I pursue to find a full-time career as a goal, after the completion bachelor degree in electrical engineering for four years. As stated in the resume, my strengths are multiple computer languages for example, language C, MATLAB and EDA tool: SPICE and Virtuso Cadence, knowing the design in CAD; NX9.0, working knowledge of HFSS, and capability of working under stress. However, my weaknesses are insufficient in writing and communication that makes me difficult expressing the thoughts. Because of these weaknesses, it required more time in writing the report and communicating with team members and sponsor.

Since the decision of pursuing the full-time career is certain, few skills need to be honed. The very first step is to alter the life routine by reading more professional journals, magazines, and books. The writing and communicating effect by changing the life routine because the skills is necessary to compensate the gap between the second language speaker and native language speaker. The engineering career is intensive and the knowledge is the power on the problem solving skill. Never stop learning should be the altitude after graduation. Although continue my education is not as I plan for now, but still keep my option open. I plan to accomplish a MBA degree and leading engineer team for a company in a future.

After I participated this capstone project, I have robust the concept of the engineering solving process, and learn the value of the capital project. As I mentioned my goal is leading engineering team in the future. I would need to gain as many professional experiences in order to accomplish MBA degree.
Appendix: Resume

Poyuan Han

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Objective
To obtain an internship or a full-time job in a company that will allow me to gain experience in the field of Engineering, as well as apply the skills I have learned, to projects and assignments that will be beneficial toward my future ambitions, as well as the company.

Education
Michigan State University, East Lansing
Fall 2010- Expect Dec 2014
- Bachelor of Science in Electrical Engineering
Governor French Academy
Fall 2006- May 2010
- General Education Diploma

Professional Experience
Project Improvement Intern
July 2013-August 2013
AU Optronics Corporation, (Suzhou, China)
- Comprehend the concept of manufacture and valuable capital project
- Analyzed the project for product cycle time
- Attended bi-weekly report meetings regarding new product development and product qualit

Additional Experience
Smart Camera to Measure Coil Diameter project
Sep 2014-Present
Arcelor Mittal, (East Lansing, MI)
- Development of a prototype software for a Smart camera to measure the diameter of a steel coil as it is wound at an Arcelor Mittal steel plant.
- Specify the customer order from host computer control system, and input them as variables into the Smart Camera” analysis program.
- Work closely with sponsor and facilitator to discuss customer needed, and conduct weekly meeting with team members for project further improvement

Global Entrepreneurship Club Member
Jan 2014-Present
Michigan State University, (East Lansing, MI)
- Responsible for generating product volumes for multiple Fortune 500 companies.
- Learned to develop online shopping community base
- Lead weekly meeting with professional entrepreneurs to conduct seminars

Electrical Engineering Team Leader
Sep 2013-March 2014
Michigan State University Formula Racing Team, (East Lansing, MI)
- Assisted the power system for the Formula Car
- Performed electrical circuitry analysis to ensure reliable system performance
- Coordinated weekly electrical team meetings to reach realistic timelines
Array Patch Antenna Designer  
Oct 2013-Dec 2013  
Michigan State University College of Engineering, *(East Lansing, MI)*
- Gained advanced knowledge of Electromagnetic, and design basic antenna

Audio Enthusiasm Engineering (AEE) Club Member  
Jan 2013-Present  
Michigan State University College of Engineering, *(East Lansing, MI)*
- Gained advanced knowledge of circuit design of audio system
- Design hands on audio instrument project; amplifier, color organ,
- Manage materials and components order delivery and cost for projects

LEGO Robot Designer  
Jan 2011-May-2011  
Michigan State University College of Engineering, *(East Lansing, MI)*
- Used advanced knowledge of Robot programming and control systems for obstacle course completion
- Learned communication skills and team work abilities

**Skills and abilities**

**Language**
- Proficient in Mandarin Chinese, English, and Taiwanese