To: Bonnie Hsia, Prof SJSU

From: Partha Sarathi Ghosh

Subject: Literature Review Progress Report

Date: November 23, 2019

This memo is a progress report for the Literature Review assignment in ENGR-200W course.

Summary

This memo is written to provide an update about my Master's thesis work. It contains a brief summary and rational for selecting the topic for the thesis. It also briefly describes the goal, work items, advisors and choice of literature style for the thesis work.

Discussion

The title of my thesis is *Asset Vulnerability Ranking Algorithm for Security Risk Management*. Risk Management is one the primary tools used in cyber security today. Risk Management involves the following steps on the assets.

1. Identify all the physical and virtual assets in an organization.
2. Assign a risk profile to each asset.
3. Perform risk evaluation on each asset.
4. Perform risk mitigation on each asset.

The software and hardware assets in an organization could be physically or virtually distributed across geographies. All computing hardware and software resources are interconnected in an enterprise network infrastructure. Manually inventorying these assets are a humongous task in itself. One of the approach to minimize the security risks in an organization is to perform a risk assessment on these assets.

The scope of this topic would be to achieve the following 4 objectives,

1. Identify the methods to aggregate the information on the hardware and software assets in an enterprise network.
2. Identify the parameters that would be used in identifying the vulnerability of a software or a hardware.
3. Study different stochastic methods to be used in the creation of the algorithm.

4. Explore the possibility of creating a cyber asset vulnerability ranking algorithm for these assets, based on their hardware configurations, operating systems, open source software being used and other parameters.

My advisors for this thesis are

- Dr. Younghee Park, Ph.D. San Jose State University,
- Prof. KaiKai Liu, Ph.D. San Jose State University,
- Mr. Vikrant Nanda, M.S, MBA, Adjunct Prof. School of Business, SJSU,

My anticipated graduation date is December 2020. I will be using IEEE style for citation, as that is the style recommended by the Office of Graduate Studies at San Jose State University.

I have created a schedule using Gantt chart for this thesis work. The Gantt chart will layout my plan of work for the thesis, dividing the work into multiple tasks.

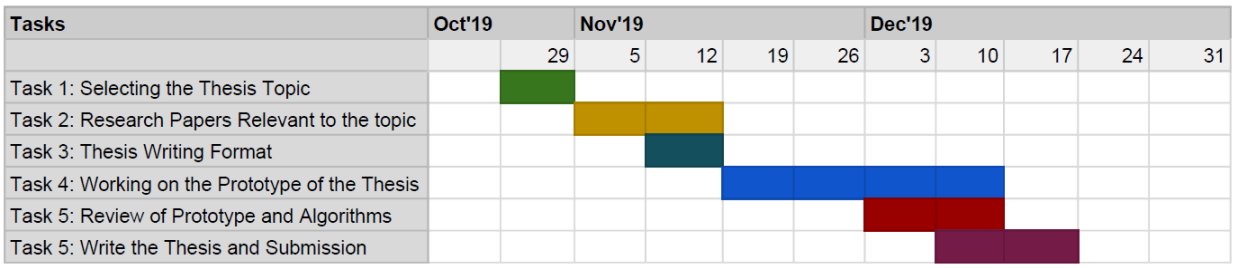

Figure 1: Gantt Chart for Litearture Review

Conclusion

I'm at the early stages of research with my thesis. I'm spending time to research relevant articles, using the IEEE and ACM online library. This will help me in attaining the goals of my thesis. I'm having discussion with my professors on the different approaches that the algorithms could take to make this thesis a fruitful one.

In the coming weeks I will start working, to develop the prototype software that would be needed for the thesis. This prototype will be eventually scaled up, during the later stages of the thesis work.

I appreciate the time that you are taking to review this progress report and the Gantt chart. Please feel free to email me at *parthasarathi.ghosh@gmail.com* if you have any questions or bring them up in class.