03. Study program in Japan (研究計画)

Projected Timetable:
The following timetable is formatted for a two year course of study. If it is determined by my university that I require more / less Japanese language study, the timetable will be adjusted accordingly.

Area of Study 研究分野	Month-Year 月　年	Description * 説明
Section One: Software ソフトウェア 10/2017~9/2018	10-2017	1-A Preparation and Research 準備 / 研究
	11-2017 12-2017 1-2018 2-2018	1-B CAD simulations
	3-2018 4-2018 5-2018	1-C Control Theory 制御理論
	6-2018 7-2018 8-2018 9-2018	1-D Analysis of Algorithms アルゴリズム解析
Section Two: Hardware ハードウェア 10/2018~5/2019	10-2018	2-A Preparation and Research 準備 / 研究
	11-2018 12-2018 1-2019	2-B Human Robot Interaction (HRI) ヒューマンロボットインタラクション
	2-2019 3-2019 4-2019 5-2019	2-C Mechatronics and assembly/calibration メカトロニクス
Section Three: Thesis & Final Project 論文 / 確定プロジェクト 6/2019~9/2019	6-2019 7-2019 8-2019 9-2019	3-A Thesis and Humanoid Bipedal Digitigrade Robot 論文 / プロジェクト

**A more detailed description can be found on the back of this page*

In addition to the above: As a member of my university's international club, and someone who has studied a semester abroad in Japan, I place great importance on international exchange. For this reason, I would like to devote time throughout my stint to the promotion of cultural exchange at both my university and in my community. This will include participation in clubs, presentations, and events, attending classes and workshops both on and off campus, and giving back to the community by mentoring or tutoring. My life has been enhanced immeasurable so by exposure to other cultures, and I will endeavor to give those same experiences to those around me.

Detailed Description of Study (continued from front page)

Section One: Software

Building upon what I've learned from my undergraduate in computer science I will focus on Control Theory: Foundations, Applications, and Algorithms.

This section is divided into four subsections:

1-A) Simulations: Construct initial CAD simulations and kinematic / dynamic models, and analyze Center of Mass (CoM), torque, and free-body diagrams.

1-B) Preparation and Research: I will begin with research on available open source robot operating system frameworks. I will also use this time to research and engage in extracurricular opportunities at my university and in my community.

2-C) Control Theory: I will be surveying leading research on machine learning in artificial systems; especially programs that utilize genetic algorithms for learning, and realistic artificial neural networks.

2-D) Analysis of Algorithms: In an effort to make the system as responsive and efficient as possible, I will be analyzing the algorithms based on their time and space efficient using Big O Notation.

Section Two: Hardware

Foundations and Principles of Robotics: Dynamics, Mechatronics, and Human-Robot Interaction (HRI).

This section is divided into three subsections:

2-A) Preparation and Research: I will begin with the Theory of Machines - Kinematics and Dynamics. After that my focus will be on sensors, and actuators. As with subsection 1-A, I will also use this time to research and engage in new extracurricular opportunities at my university and in my community.

2-B) Mechatronics : Will cover the design process involved in the manufacture of microprocessor -controlled electromechanical systems. Including, interfacing sensors and actuators to a computer, electrical and mechanical design, prototyping, and construction.

3-C) HRI : I will be surveying leading research, design principles, and the technical challenges we face in developing robots capable of operating in our world.

Assembly: After approval from my advisor, I will order/construct the necessary sensors, wires, actuators, PCB boards, and begin the calibration and assembly of the 3D printed components.

Section Three: Thesis and Final Project

Some parts of Section Three will be completed parallel to Section One and Section Two

3-A) Thesis and Final Project: As an avid supporter of the open source development platform, I believe the result of this project should be available to everyone. Allowing interested parties in a myriad of different countries and disciplines to contribute to, and help the project evolve while promoting cultural exchange and dialogue.