0.1 Development PC

Designations pertaining to the development PC with respect to the test platform are exhibited in Table 0.1.

Table 0.1: Development PC Specifications

Hardware	**Version**
PC	2015 Macbook Pro [1]

Software	**Version**
Operating System (OS)	macOS 10.12.5
Mathworks Software Suite	r2017a
· *MATLAB*	-
· *Simulink*	-
· *Control System Toolbox*	-
· *DSP System Toolbox*	-
· *Instrument Control Toolbox*	-
· *MATLAB Coder*	-
· *Simulink Coder*	-
· *Simulink Desktop Real-Time*	-
· *Matlab Support Package for Arduino Hardware*	17.1.0
· *Simulink Support Package for Arduino Hardware*	17.1.0
Xcode [*A Mathworks (macOS)-Supported Compiler [2].*]	7.3.1
Rensselaer Arduino Support Package Library (RASPLib) [*A third-party Simulink Support Package for MinSeg Hardware [3].*]	1.1

0.1.1 Designated PC

A 2015 Macbook Pro PC was selected as the designated development PC, as this was available to the researcher without the need to request additional funding.

0.1.2 Designated Operating System

macOS was selected as the designated operating system, as this was the only operating system installed on the designated PC. (*Version 10.12.5 was the most up to date version at the time of research.*)

Alternative Operating System Compatibility

Although the macOS operating system was used, alternative operating systems (*Windows and/or Linux*) would be equally acceptable.

Such a transition would primarily require an alternative Mathworks-supported compiler [2] which would be compatible with the new operating system. Slight alterations to the method of determining the test platform serial communication channel, as described in Section **??** would also be required.

It is not expected that such a transition would be preventatively difficult.

0.1.3 Designated Hardware-Interfacing Software

The Mathworks Software Suite was selected as the designated hardware-interfacing software due to:

- Its first-party support for programming real-time hardware.
- Its first-party support for simulating real-time hardware.
- Its first-party driver support for Arduino-brand microcontrollers.
- Its third-party driver support for the MinSeg.
- Its first-party support for serial communication with hardware in real-time.
- Its relatively user-friendly language and interfaces.
- Its relative commonality among students and academic institutions. [*The software environment was already relatively familiar to the author and to the advising professor prior to performing this study.*]
- Its relatively affordable cost. [*With respect to students and academic institutions. ~$150*].

0.1.3.1 Supported Compiler

0.1.3.2 First-Party Support Packages

0.1.3.3 Third-Party Support Packages

who

where

how

0.1.3.4 Arduino Interfacing

0.1.3.5 Programming

0.1.3.6 Serial Communication