**Chapter3: Hardware and Software Details**

**SPECIFICATIONS**

**Hardware Specification**

CPU - Dual Core 2.2 GHz

Processor – Intel Core i3 7th Generation

Ram - 4 GB minimum

OS - 64-bit Windows 10

**Software Specification**

Tools – Python, Anaconda(jupyter notebook)

Technologies – Artificial Intelligence (CNN)

Libraries – keras, os, cv2

**Software and Hardware Requirements**

* The CNN and keras code needs to be written in a programming language, Since, we are using AI for our task. So, programming language such as R and Python is best suitable. In this project, I have implemented in Python as it is having rich library and many more benefits over R.
* Anaconda software was used and jupyter notebook for IDE. We installed the required libraries in Anaconda seperate environment other than base environment.
* A CPU such as i7–7500U is capable of training an average of 115 examples/second. So for smaller tasks CPU is sufficient. However for complex tasks a GPU may be needed otherwise it will slow down the training process.
* A GPU can perform convolutional based operations on a batch of images of 128 or 256 images at once in just a few milliseconds. However, the power consumption is huge which leads to a total of 400W.
* In this system one epoch took approximately 7-8 minutes to run. Hence, an average of 25 epochs would need 3-4 hours in CPU.