This project utilizes a Python-based tech stack. Different pieces of this project have very specific versioning requirements for each package installation in order to work properly, and should be able to be run on Windows, Linux or Mac systems.

## Requirements

* [Anaconda3](https://www.anaconda.com/distribution/)
  + Python 3.5.6
  + NVIDIA GPU with CUDA 7+ support
* [Visual Studio Code](https://code.visualstudio.com/Download)
  + Recommended: [Anaconda Extension Pack](https://marketplace.visualstudio.com/items?itemName=ms-python.anaconda-extension-pack)
  + Recommended: [Python Extension Pack](https://marketplace.visualstudio.com/items?itemName=donjayamanne.python-extension-pack)

## Python Packages

* Conda 4.5.11
* PIP 10
* SciPy / NumPy
* Matplotlib
* PyGame 1.9.4
* OpenCV
* CUDA 8
* CuDNN 7 (CUDA GPU Neural Network)
* TensorFlow 1.10 / TensorFlow-GPU 1.10
* Keras 2.1.6

# Environment Setup

1. From Anaconda Prompt or Visual Studio Code terminal update(root)/(base)conda environment:

**conda** update conda

**conda** update –all

1. Add additional package channels to the conda config file:

* If you’re running Windows, add delichon and conda-forge channels
* If you’re running Linux or MacOS, add jiayi\_anaconda, menpo, intel, and conda-forge channels

**conda** config –-add channels delichon

**conda** config –-add channels intel

**conda** config –-add channels anaconda

**conda** config –-add channels menpo

**conda** config –-add channels jiayi\_anaconda

**conda** config –-add channels conda-forge

1. Create a new environment preinstalled with the correct python, conda, and pip versions:

**conda** create -n flappy python=3.5 pip conda=4.5.2

* + Neglecting to specify package versions in this step may put your environment in a non-working state

1. Activate flappy to set it as your working python environment, and update the default packages:

**conda** activate flappy

**conda** update --all

1. Optionally install binstar (anaconda-client) to search for package channels supporting the python versions and the operating system of your platform, then install from identified channels:

**conda** install binstar

**conda** install anaconda-client

**anaconda** search -t **conda** *{package}*

**conda** config –-add channels *{channel} # add channel to conda config*

**conda** install -c *{channel} {package} # single install from channel*

1. Install **conda** package dependencies:

**conda** install scipy matplotlib

**conda** install scikit-learn scikit-image

**conda** install pygame opencv3

**conda** install jupyterlab

1. Install **pip** package dependencies:
   * Installing TensorFlow and Keras packages incorrectly or with conda may prevent them from working

**conda** install cudatoolkit=8.0 cudnn=6.0

**conda** install tensorflow-gpu

**conda** install tensorflow=1.12

**conda** install -c conda-forge keras

1. Do not update the flappy environment once you have the correct versions installed and working ; doing so may cause versioning issues that prevent the reinforcement learner or emulation from running