# Installation instructions

## 1 chunkie

### 1.1 Option 1: Command line installation

To get chunkie with all its dependencies, clone it from `https://github.com/fastalgorithms/chunkie` as

```
git clone –recurse-submodules https://github.com/fastalgorithms/chunkie.git
```

You will need to switch to the `dev-rcip` branch to use the widget. This can be done by running

```
git checkout dev-rcip
```

Then you can run `startup.m` to add both chunkie and its dependencies to the MATLAB path.

### 1.2 Option 2: Package download and install

Download the `dev-rcip` branch of chunkie from `https://github.com/fastalgorithms/chunkie` and download FLAM from `https://github.com/klho/FLAM`. In each of the respective directories run `startup.m` to add the relevant directories to the MATLAB path.

### 1.3 Testing the installation

In order to test the accurate installation of the correct version of the chunkie package, you can run `testclm4.m` located at `chunkie/clmtest`. The code should run in a few seconds, (it takes less than 5 seconds on a 2019 Macbook Pro) and the last line should report an error less than $10^{-12}$.

If you can't find the relevant folder, then with high likelihood you are on the incorrect branch.

## 2 fmm2d

For some of the post processing, you will also need the matlab interfaces from the fast multipole library in two dimensions. You can try using the precompiled MATLAB interfaces available in the `fmm2d_matlab_binaries` folder. To make them available to the widget, just run `startup_fmm2d.m` to add the relevant folder to the PATH.

To verify successful installation of the fmm2d library, you can run the test_fmm.m script in the folder. It should report back with `Successfully completed 2 out of 2 tests in fmm2d testing suite`.

In case the installation fails, you can generate the MATLAB interfaces for the fmm2d library by first getting the package from `https://github.com/flatironinstitute/fmm2d`.

You will need to copy over the appropriate make.inc.⋆ file, depending on your operating system and compiler installed to make.inc followed by running `make matlab` and `matlab/startup.m`. For example on a windows machine, you would run the following from a command prompt

```
copy make.inc.windows make.inc
```

```
make matlab
```

You would still need to run the `matlab/startup_fmm.m` script from MATLAB to set the path. For detailed installation instructions see `https://fmm2d.readthedocs.io/en/latest`. If you are going this route, make sure that the path to the `fmm2d/matlab` folder is higher in priority in your MATLAB path than the `insect_eye_2d_widget/fmm2d_matlab_binaries` folder.