# How to contribute

Our software is open source so you can solve your own problems without needing help from others. And if you solve a problem and are so kind, you can upstream it for the rest of the world to use.

Most open source development activity is coordinated through our [Discord](https://discord.comma.ai). A lot of documentation is available on our [medium](https://medium.com/@comma\_ai/).

## Getting Started

\* Join our [Discord](https://discord.comma.ai)

\* Make sure you have a [GitHub account](https://github.com/signup/free)

\* Fork [our repositories](https://github.com/commaai) on GitHub

## Testing

### Local Testing

You can test your changes on your machine by running `run\_docker\_tests.sh`. This will run some automated tests in docker against your code.

### Automated Testing

All PRs and commits are automatically checked by Github Actions. Check out `.github/workflows/` for what Github Actions runs. Any new tests sould be added to Github Actions.

### Code Style and Linting

Code is automatically checked for style by Github Actions as part of the automated tests. You can also run these tests yourself by running `pre-commit run --all`.

## Car Ports (openpilot)

We've released a [Model Port guide](https://medium.com/@comma\_ai/openpilot-port-guide-for-toyota-models-e5467f4b5fe6) for porting to Toyota/Lexus models.

If you port openpilot to a substantially new car brand, see this more generic [Brand Port guide](https://medium.com/@comma\_ai/how-to-write-a-car-port-for-openpilot-7ce0785eda84). You might also be eligible for a bounty. See our bounties at [comma.ai/bounties.html](https://comma.ai/bounties.html)

## Pull Requests

Pull requests should be against the master branch. Before running master on in-car hardware, you'll need to clone the submodules too. That can be done by recursively cloning the repository:

```

git clone https://github.com/commaai/openpilot.git --recursive

```

Or alternatively, when on the master branch:

```

git submodule init

git submodule update

```

The reasons for having submodules on a dedicated repository and our new development philosophy can be found in our [post about externalization](https://medium.com/@comma\_ai/a-2020-theme-externalization-13b33326d8b3).

Modules that are in seperate repositories include:

\* apks

\* cereal

\* laika

\* opendbc

\* panda

\* rednose