

# Installation Guide for AI Fairness 360

## Introduction

We will describe how to install the AI Fairness 360 toolkit (AIF360) on a standard machine running Windows, Linux, or macOS operating systems. This guide is created for the audience at IBM Learn AI Day 2020. Audience members are requested to sign up to the Slack channel since a lot of discussion is expected to happen there. Remote support will also be provided through the channel.

Additional help can be obtained from the following places:

- AIF360 landing page: <http://aif360.mybluemix.net>
- AIF360 GitHub page: <https://github.com/IBM/AIF360>
- Slack channel: [https://aif360.slack.com/app\\_redirect?channel=learn-ai-day-2020](https://aif360.slack.com/app_redirect?channel=learn-ai-day-2020) (Invite link: [https://join.slack.com/t/aif360/shared\\_invite/zt-5hfvafo-X0~g6tgJQ~7tIAT~S294TQ](https://join.slack.com/t/aif360/shared_invite/zt-5hfvafo-X0~g6tgJQ~7tIAT~S294TQ)).
- One of the instructors (Karthi Ramamurthy or Trisha Mahoney on Slack)

All commands and console messages will be given in monospace font.

## Requirements

- Python 3.5-3.7 (Anaconda distribution preferred)
  - Miniconda can be installed from <https://conda.io/miniconda.html>
  - Otherwise, Python can be installed from <https://www.python.org/downloads/release/python-377/>
- Access to command prompt/terminal (no GUI install available)

## Overview

1. Open a command prompt/terminal window and check if you have Anaconda installed by typing `conda` in the window. If this fails, you have two options:
  - a. Install Miniconda from the link above (recommended), or
  - b. Proceed with just Python. Type `python3 -V` in the window and check that the version number is between 3.5 and 3.7, inclusive.
2. Install base package and datasets
3. (Optional) Install extra dependencies to unlock all algorithms

## Creating a virtual environment

A virtual Python environment creates an isolated space where packages can be installed. This prevents changes to other previously installed software due to dependencies from the new packages. It also ensures that all installations start with the same blank slate.

To create a new environment named “aif360” with Python 3.7, run

```
conda create --name aif360 python=3.7
conda activate aif360
```

The shell should now show (aif360) to the far left of the cursor. To exit the virtual environment, run

```
conda deactivate
```

Do not deactivate until you have completed doing experiments with AIF360. You can also remove the environment and delete the contents if something goes wrong and you’d like to start over by running

```
conda env remove --name aif360
```

If you opted not to install conda, run

```
python3 -m venv <DIR>
source <DIR>/bin/activate
```

where <DIR> should be substituted for a path of your choosing. On Windows, the second line is different

```
<DIR>\Scripts\activate
```

Again, the shell should now show a prefix, e.g. (aif360) if you used ~/venv/aif360 as <DIR>.

To deactivate, just type deactivate. Do not deactivate until you have completed doing experiments with AIF360. You can also remove the environment and delete the contents if something goes wrong and you’d like to start over by deleting the entire <DIR> folder.

## Install the tutorial files

First, we need to install the AIF360 package. Ensure the aif360 environment is activated, then run

```
pip install 'aif360[LFR,LIME,notebooks]==0.3.0rc0'
```

This will install all the dependencies we need to run the tutorial notebooks.

Then, download the `tutorial_files.zip` file from the *#learn-ai-day-2020* Slack channel and unzip it in place. ***Note: by downloading this file you acknowledge the responsibility for reading and abiding by any copyright/usage rules and restrictions as stated on the corresponding links\****.

Change to the `tutorial_files` directory

```
cd ~/Downloads/tutorial_files
```

or, on Windows,

```
cd C:\Users\%USERNAME%\Downloads\tutorial_files
```

Finally, run the `copy_datasets.py` script to copy the datasets to the correct locations in the AIF360 toolkit

```
python copy_datasets.py
```

When it's time to run the interactive tutorial, open the Jupyter Notebook Viewer by running

```
jupyter notebook examples
```

in the `tutorial_files` directory. This should open a browser window. If not, try typing `localhost:8888` in the URL bar of your browser.

If you have any issues with Jupyter, try deactivating and reactivating the conda environment. Sometimes a different Jupyter installation may cause interference.

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\* Adult Census Income: <https://archive.ics.uci.edu/ml/datasets/adult>

German Credit Data: <https://archive.ics.uci.edu/ml/datasets/Statlog+%28German+Credit+Data%29>

ProPublica Recidivism (COMPAS): <https://github.com/propublica/compas-analysis>

Medical Expenditure Panel Survey (MEPS): [https://meps.ahrq.gov/data\\_stats/data\\_use.jsp](https://meps.ahrq.gov/data_stats/data_use.jsp)

## Install the extra toolkit features

If you've followed the steps so far, you should be able to run the tutorial notebooks for the seminar with no problems. If you are interested in exploring the full capabilities of the toolkit, there are a few more steps required.

**Windows only** – download the Visual Studio build tools for Python 3

<https://visualstudio.microsoft.com/thank-you-downloading-visual-studio/?sku=BuildTools&rel=16>

and select C++ build tools to install. See these instructions for more details:

<https://drive.google.com/file/d/0B4GsMXCRaSSIOWpYQkstajlYZ0tPVkNQSEImTWh1dXFaYkJr/view>

**MacOS only** – if you've never installed XCode tools, you'll need to run

```
xcode-select --install
```

Then, for all platforms, run

```
pip install 'aif360[all]==0.3.0rc0'
```