Exploring Urban Data with Machine Learning

# Installing GeoPandas

Some Python packages for GeoPandas depend on several low-level libraries, which can be a challenge to install. Therefore, I recommend reading the following instructions carefully before installing GeoPandas.

## FYI, here is the GeoPandas installation instruction page:

https://geopandas.readthedocs.io/en/latest/getting_started/install.html

**IMPORTANT for Mac users** who haven't used 'pip' install before (or who do not know about 'pip'):
Before installing please check the followings:

1) Launch your terminal. *Make sure, you should quit any Jupyter notebook or other kernels. Just open terminal (Mac OS).*
2) Type conda list
3) If it returns libraries, you can jump to the installation process.
4) If it returns 'command not found: conda' or any other errors, please send me (bh2764@columbia.edu) a screenshot asap.

- ## Option 1: If you've NOT tried to install GeoPandas before,

    1) Please launch your Anaconda Prompt (Windows) or terminal (Mac OS) and type the following line to install the latest version of GeoPandas. *Make sure, you should quit any Jupyter notebook or other kernels. Just open Anaconda Prompt (Windows) or terminal (Mac OS)* and type

    ```
    conda install --channel conda-forge geopandas
    ```

    OR

    ```
    conda install geopandas
    ```

    * Do NOT use `pip install geopandas`

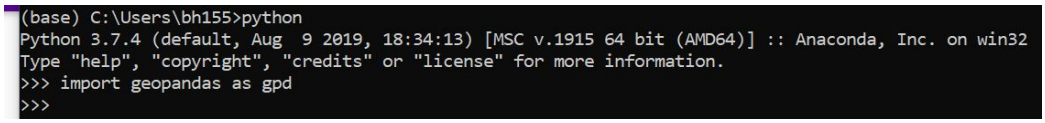
2) Type the following to check whether GeoPandas installed successfully:

```
python
```

Then you can see >>> and then type

```
import geopandas as gpd
```

If GeoPandas has been installed successfully, you will not see any error as below.




- **Option 2: If you have tried to install GeoPandas before and it wasn't installed successfully,**

1) Please uninstalled your Anaconda and Python (if you uninstall Anaconda, then Python can be removed as well)
2) Reinstall Anaconda and please follow the instructions above to install geopandas.

- **Option 3: Still doesn't work and are you a Windows user? Then, please follow the instructions below:**

Installing geopandas and its dependencies manually (Geoff Boeing)

1) First and most important: do not try to directly pip install or conda install any of the dependencies – if you do, they will fail in some way later, often silently or obscurely, making troubleshooting difficult. If any are already installed, uninstall them now.

2) Download the wheels for GDAL, Fiona, pyproj, rtree, and shapely from Gohlke. Make sure you choose the wheel files that match your architecture (32-bit or 64-bit) and Python version (2.7 or 3.x). If Gohlke mentions any prerequisites in his descriptions of those 5 packages, install the prerequisites now (there might be a C++ redistributable or something similar listed there).

3) If OSGeo4W, GDAL, Fiona, pyproj, rtree, or shapely is already installed, uninstall it now. The GDAL wheel contains a complete GDAL installation – don't use it alongside OSGeo4W or other distributions.

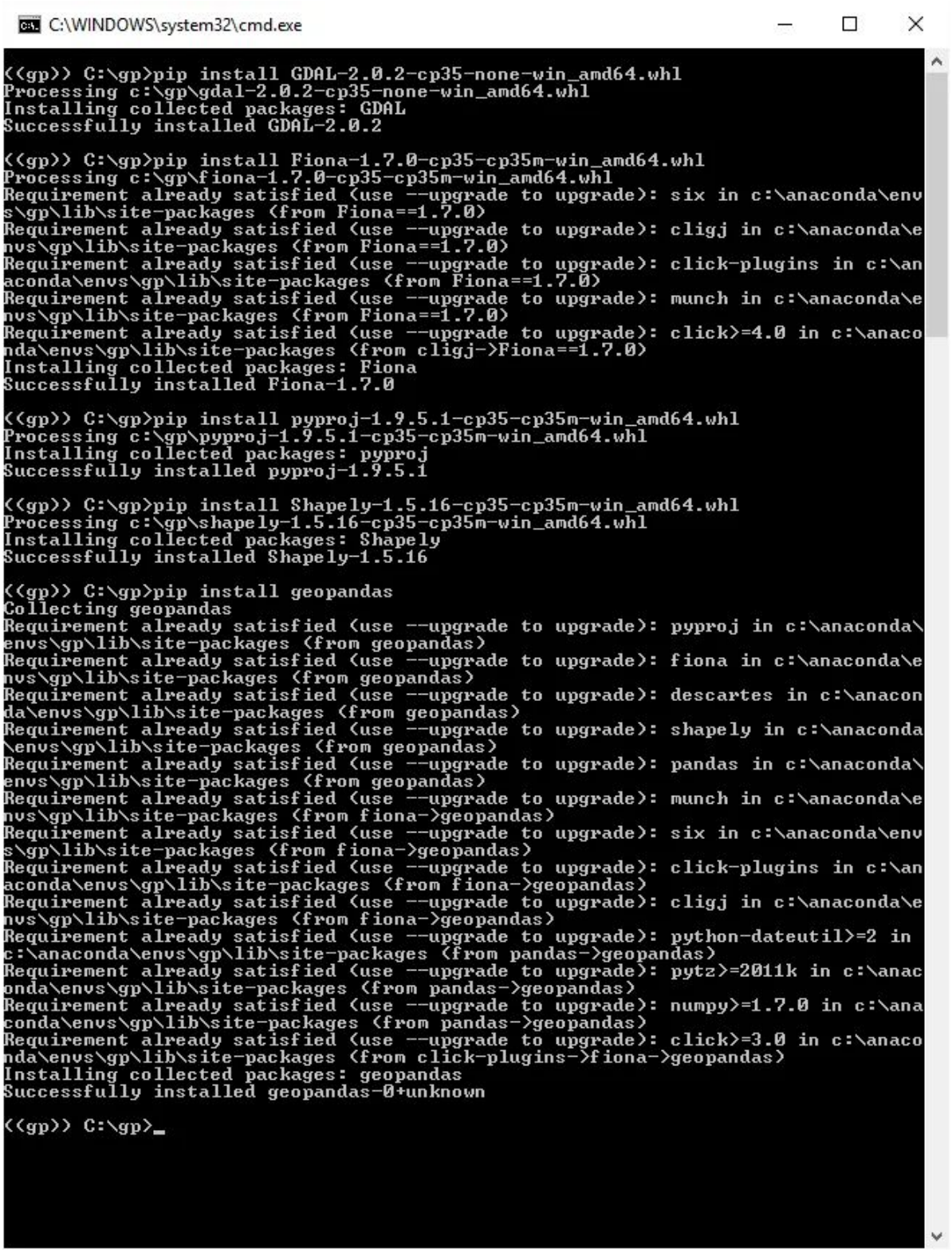
4) Open a command prompt and change directories to the folder where you downloaded these 5 wheels.

5) pip install the GDAL wheel file you downloaded. Your actual command will be something like: pip install GDAL-1.11.2-cp27-none-win_amd64.whl

6) Add the new GDAL path to the windows PATH environment variable, something like C:\Anaconda\Lib\site-packages\osgeo

7) pip install your Fiona wheel file, then your pyproj wheel file, then rtree, and then shapely.

8) Now that GDAL and geopandas's dependencies are all installed, you can just pip install geopandas from the command prompt, like the screenshot below:


C:\WINDOWS\system32\cmd.exe
((gp)) C:\gp>pip install GDAL-2.0.2-cp35-none-win_amd64.whl
Processing c:\gp\gdal-2.0.2-cp35-none-win_amd64.whl
Installing collected packages: GDAL
Successfully installed GDAL-2.0.2
((gp)) C:\gp>pip install Fiona-1.7.0-cp35-cp35m-win_amd64.whl
Processing c:\gp\fiona-1.7.0-cp35-cp35m-win_amd64.whl
Requirement already satisfied (use --upgrade to upgrade): six in c:\anaconda\envs\gp\lib\site-packages (from Fiona==1.7.0)
Requirement already satisfied (use --upgrade to upgrade): cligj in c:\anaconda\envs\gp\lib\site-packages (from Fiona==1.7.0)
Requirement already satisfied (use --upgrade to upgrade): click-plugins in c:\anaconda\envs\gp\lib\site-packages (from Fiona==1.7.0)
Requirement already satisfied (use --upgrade to upgrade): munch in c:\anaconda\envs\gp\lib\site-packages (from Fiona==1.7.0)
Requirement already satisfied (use --upgrade to upgrade): click>=4.0 in c:\anaconda\envs\gp\lib\site-packages (from cligj->Fiona==1.7.0)
Installing collected packages: Fiona
Successfully installed Fiona-1.7.0
((gp)) C:\gp>pip install pyproj-1.9.5.1-cp35-cp35m-win_amd64.whl
Processing c:\gp\pyproj-1.9.5.1-cp35-cp35m-win_amd64.whl
Installing collected packages: pyproj
Successfully installed pyproj-1.9.5.1
((gp)) C:\gp>pip install Shapely-1.5.16-cp35-cp35m-win_amd64.whl
Processing c:\gp\shapely-1.5.16-cp35-cp35m-win_amd64.whl
Installing collected packages: Shapely
Successfully installed Shapely-1.5.16
((gp)) C:\gp>pip install geopandas
Collecting geopandas
Requirement already satisfied (use --upgrade to upgrade): pyproj in c:\anaconda\envs\gp\lib\site-packages (from geopandas)
Requirement already satisfied (use --upgrade to upgrade): fiona in c:\anaconda\envs\gp\lib\site-packages (from geopandas)
Requirement already satisfied (use --upgrade to upgrade): descartes in c:\anaconda\envs\gp\lib\site-packages (from geopandas)
Requirement already satisfied (use --upgrade to upgrade): shapely in c:\anaconda\envs\gp\lib\site-packages (from geopandas)
Requirement already satisfied (use --upgrade to upgrade): pandas in c:\anaconda\envs\gp\lib\site-packages (from geopandas)
Requirement already satisfied (use --upgrade to upgrade): munch in c:\anaconda\envs\gp\lib\site-packages (from fiona->geopandas)
Requirement already satisfied (use --upgrade to upgrade): six in c:\anaconda\envs\gp\lib\site-packages (from fiona->geopandas)
Requirement already satisfied (use --upgrade to upgrade): click-plugins in c:\anaconda\envs\gp\lib\site-packages (from fiona->geopandas)
Requirement already satisfied (use --upgrade to upgrade): cligj in c:\anaconda\envs\gp\lib\site-packages (from fiona->geopandas)
Requirement already satisfied (use --upgrade to upgrade): python-dateutil>=2 in c:\anaconda\envs\gp\lib\site-packages (from pandas->geopandas)
Requirement already satisfied (use --upgrade to upgrade): pytz>=2011k in c:\anaconda\envs\gp\lib\site-packages (from pandas->geopandas)
Requirement already satisfied (use --upgrade to upgrade): numpy>=1.7.0 in c:\anaconda\envs\gp\lib\site-packages (from pandas->geopandas)
Requirement already satisfied (use --upgrade to upgrade): click>=3.0 in c:\anaconda\envs\gp\lib\site-packages (from click-plugins->fiona->geopandas)
Installing collected packages: geopandas
Successfully installed geopandas-0+unknown
((gp)) C:\gp>

- **Option 4: Still doesn't work and are you a Mac user? Then the following instructions would be alternative.**

    1) Check dependencies using the following command in Anaconda Prompt

    ```
    pip freeze
    ```

    Then all installed dependencies are shown. And now you need to check whether ***pandas, shapely, fiona, and pyproj*** are installed.

    If any of these dependencies is not installed, please install manually using the following command

    ```
    pip install Shapely
    pip install pyproj
    pip install Fiona
    ```

    Then GeoPandas can also be installed with pip, if all dependencies can be installed as well:

    ```
    pip install geopandas
    ```

- **Option 5: Nothing works for you? Then please try to create a new environment as below:**

## Creating a new environment

Creating a new environment is not strictly necessary, but given that installing other geospatial packages from different channels may cause dependency conflicts (as mentioned in the note above), it can be good practice to install the geospatial stack in a clean environment starting fresh.

The following commands create a new environment with the name `geo_env`, configures it to install packages always from conda-forge, and installs GeoPandas in it:

```
conda create -n geo_env
conda activate geo_env
conda config --env --add channels conda-forge
conda config --env --set channel_priority strict
conda install python=3 geopandas
```