

Using PyCharm in CS182

Based on a similar handout from CS106A

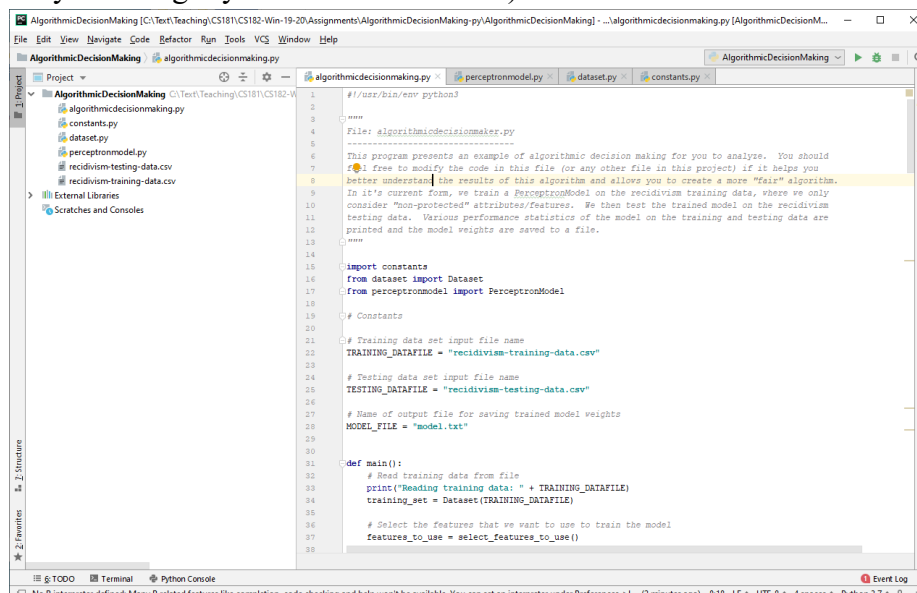
This handout provides the basics of how to use PyCharm for the technical assignments in CS182. You can download the latest version of PyCharm by following the instructions from the **Software** web page on the CS182 website. There is a link near the top of that give you instructions for installing PyCharm. Please follow those instructions carefully.

Downloading the starter project

The first step to work on a technical assignment in CS182 is to download the starter project for that assignment. If you go to the CS182 assignment page (go to the CS182 web site and click the **Assignments** link on the left-hand side of the page), you'll see a link for the starter files for the Algorithmic Decision-Making technical assignment. If you click on the link for the starter files, your web browser will download the starter folder (**AlgorithmicDecisionMaking.zip**). In some cases, the browser will also unzip/extract the folder automatically, assuming that you have the appropriate software for expanding files from a ZIP archive. If you don't have software to unzip/extract the archive, you'll need to get a utility to unzip the archive (for example, extraction software is usually built-in to Windows 11 or macOS). The unzipped contents of the ZIP file is a directory named **AlgorithmicDecisionMaking** that contains the project. Move that folder to some place on your file system where you can keep track of it when you want to load the project.

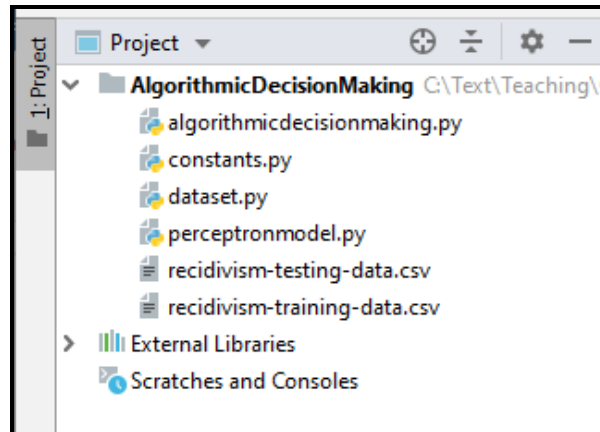
Starting PyCharm with the starter project

Once you've finished installing PyCharm and have also downloaded the starter project, you're ready to get going. Open the directory named **AlgorithmicDecisionMaking** and open (double-click on) the file **algorithmicdecisionmaking.py**. This will launch PyCharm (note that it may take a minute or two for PyCharm to start up) with the project ready to go. You will have a screen that looks like this (the Windows version is shown below, it may look slightly different on the Mac):



```
1  #!/usr/bin/env python3
2
3  """
4  File: algorithmicdecisionmaker.py
5
6  This program presents an example of algorithmic decision making for you to analyze. You should
7  feel free to modify the code in this file (or any other file in this project) if it helps you
8  better understand the results of this algorithm and allows you to create a more "fair" algorithm.
9
10 In its current form, we train a PerceptronModel on the recidivism training data, where we only
11 consider "non-protected" attributes/features. We then test the trained model on the recidivism
12 testing data. Various performance statistics of the model on the training and testing data are
13 printed and the model weights are saved to a file.
14 """
15
16 import constants
17 from dataset import Dataset
18 from perceptronmodel import PerceptronModel
19
20 # Constants
21 # Training data set input file name
22 TRAINING_DATAFILE = "recidivism-training-data.csv"
23
24 # Testing data set input file name
25 TESTING_DATAFILE = "recidivism-testing-data.csv"
26
27 # Name of output file for saving trained model weights
28 MODEL_FILE = "model.txt"
29
30
31 def main():
32     # Read training data from file
33     print("Loading training data: " + TRAINING_DATAFILE)
34     training_set = Dataset(TRAINING_DATAFILE)
35
36     # Select the features that we want to use to train the model
37     features_to_use = select_features_to_use()
```

At this point, PyCharm has loaded the starter project and display its name in the **Project** window (on the left-hand side of the PyCharm application) like this:



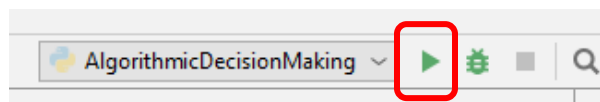
If the **AlgorithmicDecisionMaking** folder is not expanded, you can click on the ‘>’ next to it to expand its contents to see where the code resides.

These are the Python files for the assignment. You can open any of these files (if they are not already open) by double-clicking on its name. You can use PyCharm to edit these files as desired and run your program.

Running a program under PyCharm

To run a program under PyCharm, you may first need to configure the interpreter for the project (if you haven’t already configured PyCharm yet), which essentially means that you want to specify the version of Python you’ll be using to run your code. To do so, click 'configure Python Interpreter' at the top of your window. There is more information about how to do this on the webpage for installing PyCharm under the section “Testing PyCharm”. For this project, you should be using Python 3.8 (or higher).

Once you have configured your Python interpreter, you can then run the program by clicking the “play” icon in the upper right corner of the application, which is highlighted with a red rectangle below:



Or, you can run the program in the Python Terminal. The file that contains the main program to run is: **algorithmicdecisionmaking.py**

Copying text from the program output

In completing your assignment, you may find that you want to copy/paste text output from your program into your assignment write-up. When you run your program a terminal window titled “AlgorithmicDecisionMaker” appears at the bottom of the PyCharm application where the output for your program is displayed. You can copy/paste text from this window into your assignment write-up as needed.