

SSP100 How Computers See
Skidmore College
Fall 2026
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Instructions for today's class

Commands you will use today:

`mkdir` - makes a directory

`cd` - changes into a directory

`ls` - to get a listing of files in a directory

`source` - use to activate something called a virtual environment which has all the right libraries (groups of code) for this course

`gedit` - a text editor

`jupyter-notebook` - software that allows a web browser tab to enter and run python code

Also note: `&` runs software in the background which allows the terminal to be used for more commands while the program you ran is still running.

Bold is what you type.

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Instructions after logging in:

0. Open a terminal window (Applications -> Utilities -> Terminal)

1. create a folder (aka directory) from your home directory named `ssp100` by typing and entering:

`mkdir ssp100`

1.5 change into that `ssp100` folder:

`cd ssp100`

2. Within ssp100, create a folder named mnist by typing and entering::

mkdir mnist

2.5 change directory to that mnist folder

cd mnist

3. Open a web browser and download the 4 text files linked to from the url below into that mnist folder. (right click / save link as, on the links and save into mnist --- need to double click on ssp100 and then mnist)

https://meckmann.domains.skidmore.edu/2026Fall/ssp100/class_notes.html

mnist_dense1.txt

mnist_dense2.txt

mnist_cnn1.txt

mnist_cnn2.txt

4. In the terminal window type **ls** and enter to see that the four files are in there

5. Start the virtual environment that has access to all the libraries we need by typing and entering:

source /opt/venv_shared/bin/activate

6. To get familiar with a different way to interact with your files, from the desktop, double click Home folder, then ssp100 and then mnist. You should see the 4 text files in there.

Double click on the mnist_dense1.txt file to open it in a text editor.

Alternatively, in terminal you could have typed and entered:

gedit mnist_dense1.txt &

7. Type and enter:

jupyter-notebook &

8. In the browser top right click New drop down and select Python 3 (ipykernel)

9. Copy/paste the 1st chunk of lines in mnist_dense1.txt into the first text box in the notebook in the web browser. Can do this by selecting/highlighting the lines and Ctrl-C and then in the browser text box, left click in it then right-click paste or Ctrl-V

10. Within the text box with the pasted code, do Ctrl - Enter to execute that chunk of code
11. Call me over to show me that you got to this point.
12. Follow the instructions on what to copy/paste etc. in the mnist_dense1.txt
13. Once you are done testing out that first file, go back to the jupyter-notebook tab and on top right click New drop down and select Python 3 (ipykernel) again
14. copy/paste all the code (entire file) of mnist_dense2 and execute it
15. Note the difference in accuracy of the dense1 vs. dense2
16. Then do the same for mnist_cnn1
17. Note the improvement in accuracy of mnist_cnn1 vs. dense2 and also note they have about the same number of parameters (weights learned).
18. Then finally run mnist_cnn2, a deeper network which takes much longer to train. When it finishes you should notice better accuracy than cnn1