

Computer Vision

Jupyter Notebooks and Google Colab for Exercise 2

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Environment Setup

You have two choices to complete our exercises:

1. Setup jupyter notebook locally on your machine
2. Use google colab in your browser

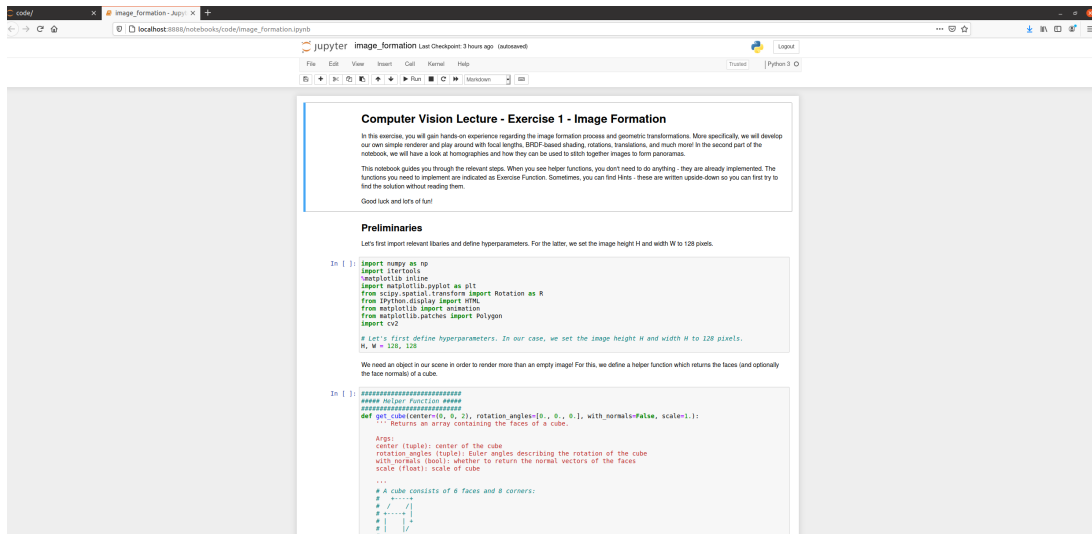
1. Local Environment Setup

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- ▶ Follow the instructions for your OS to install the Python package manager `conda`:
`https://docs.conda.io/projects/conda/en/latest/user-guide/install/`
- ▶ Download the archive for exercise 1 and open a terminal in the `code` directory
- ▶ Create the new environment `lecturecv` with required packages (numpy, etc.):
`conda env create -f environment.yml`
- ▶ Before launching your notebook you need to activate the environment:
`conda activate lecturecv-ex02`
- ▶ Run this command from the directory where the jupyter notebooks are located:
`jupyter-notebook`

1. Local Environment Setup

You can then navigate to the respective notebook and edit it in the browser

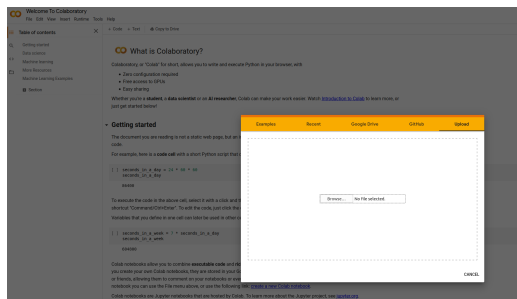


2. Online Environment Setup: Google Colab

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Alternatively, you can use Google Colab online

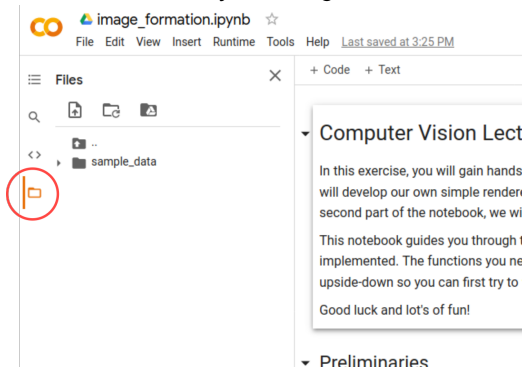
- ▶ Create a free Google account at: <https://google.com>
- ▶ Navigate to <https://colab.research.google.com/> in your browser
- ▶ Click on File → Upload notebook and upload the respective notebook



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- ▶ Create a free Google account at: <https://google.com>
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- ▶ Click on File → Upload notebook and upload the respective notebook
- ▶ You can also upload additional files by clicking on the folder symbol on the left:



Coding Exercises - Structure-From-Motion

3. Setup for the Structure-From-Motion Exercise

Running the structure-from-motion notebook in Colab requires some setup

- ▶ Colab comes with an old version of `opencv-python` that does not have SIFT
- ▶ We can install newer version directly from the notebook running in colab
- ▶ Additionally we need to install `ipympl`
- ▶ To do that, simply uncomment the first lines of the notebook

```
[ ] !pip install opencv-python==4.5.1.48
    !pip install ipympl

import cv2
import json

import numpy as np
import matplotlib.pyplot as plt
```

3. Setup for the Structure-From-Motion Exercise

Besides the dependencies we also need a few files...

- ▶ `code/sfm/img1.png`
- ▶ `code/sfm/img2.png`
- ▶ `code/sfm/cameras.npz`

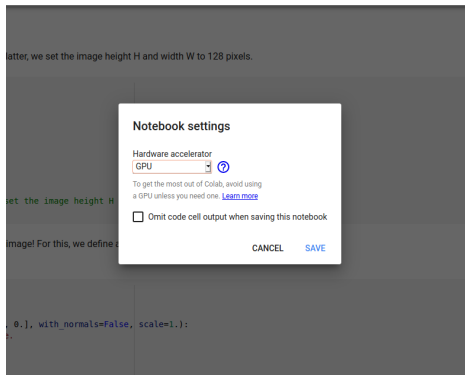
You can simply upload these from the colab environment (see prev. slides)

Coding Exercises - Stereo

3. Setup for the Stereo Exercise

If you don't have a GPU, we recommend running this notebook in Colab

- Click on Runtime → Change runtime type and select “GPU” and click “Save”:



3. Setup for the Structure-From-Motion Exercise

For this we need a few files aswell:

- ▶ `code/stereo/stereo_batch_provider.py`
- ▶ `code/stereo/KITTI_2015_subset`

You can simply upload these from the colab environment (see prev. slides)

3. Setup for the Structure-From-Motion Exercise

Can't upload folders - but there is a workaround

- ▶ Create a .zip archive of `code/stereo/KITTI_2015_subset`
- ▶ Upload the .zip (might take a bit)
- ▶ Uncomment the first line of the notebook to unzip the archive

```
[ ] !unzip KITTI_2015_subset.zip  
  
import os  
import sys  
import argparse  
import torch
```

Questions?