

Image Understanding: Segmentation and Objects Counting

Objective: Give an overview of semantic segmentation and objects counting techniques with hands on experience.

Prerequisites:

- Basic knowledge of Python and Jupyter notebooks
- A brief understanding of how DL and CNN works
- Persistent internet access
- **Laptop to write the code**

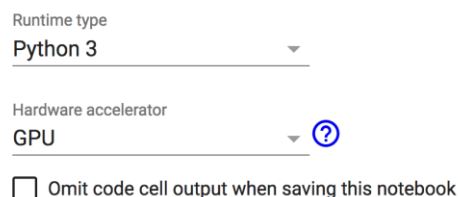
Pre-course activity (optional) – to save yourself some time and do some practice:

- Try to create notebook using [Google Colab](#) with GPU acceleration
- For those who want to dive deeper into the topic: [cs231n course](#)

Installation Instruction

- Save a copy of [IT Weekend - Workshop notebook](#) to your Drive (**File -> Save a copy in Drive**). Now you can edit it.
- All the necessary libraries are already available for you in **Google Colab**, so you don't need any additional installation.
- Setup GPU acceleration (**Runtime -> Change runtime type -> GPU**)

Notebook settings



Runtime type
Python 3

Hardware accelerator
GPU

Omit code cell output when saving this notebook

- You may check GPU availability with !nvidia-smi command in notebook cell.

Agenda:

Session 1 (45m)

- The course agenda
- Introduction to DL and CNN
- Semantic segmentation and its applications
- Overview of fast.ai library and Google Colab

Session 1 – Hands on (30m, part 1)

- Train your first segmentation model
- Evaluate model performance and visualize results

Small Break (15m)

Session 2 (15m)

- Objects counting and its applications
- Density map regression
- When semantic segmentation meets density map regression

Session 2 – Hands on (30m)

- Train model for objects counting (Data TBD)
- Evaluate model performance and visualize results

Q&A – 15m