2021 Fast.ai Community Course

QUEENSLAND HUB

QUEENSLAND AI

Lesson 3 - Production and Deployment

Mentor intro

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- **Find me at**
  - **@olgamoskvyak (Discord)**
  - **https://olgamoskvyak.github.io**
- **I'm most excited about:**
  - **DL with limited annotated data (semi-supervised learning)**
  - **Use of AI for wildlife conservation**
- **I'll be most useful to help you with:**
  - **DL for Computer Vision**
  - **Coding with FastAI, PyTorch**
  - **Advice on reading papers**

Key concepts

- DataBlock
- GUI with IPython widgets and Voilà
- Deploying
- Blogging
- Data manipulations with tensors
- Baseline for MNIST recognition

Fastbook notebooks for this week:

- Production - 02_production.ipynb (Chapter 2)
- 04_mnist_basics.ipynb

Code along session

- Learn/revise the following concepts:
  - Path objects (Patlib python library)
  - Fastai class called **L -** extension of list
  - Numpy array and tensors
  - Object types
  - List comprehensions
  - Shape, size, rank, dimension
- Practice fixing errors
- Get practice notebook from github
- Use Google Colab

DataBlock

To turn our downloaded data into a DataLoaders object we need to consider:

- What kinds of data we are working with (blocks)
- How to get the list of items (get_items)
- How to label these items (get_y)
- How to create the validation set (splitter)
- How to resize data to a unified size (item_tfms)
- How to augment data (batch_tfms)

DataBlock tutorial in docs - https://docs.fast.ai/tutorial.datablock.html

Data cleaning and GUI

- GUI for data cleaning
  - Good tip - clean data after creating a model
  - ImageClassifierCleaner() - handy GUI to clean data
- GUI with IPython widgets and Voilà
  - An easy way to create an app from Jupyter Notebook

Deployment

- Serving with Binder
- Deploying on CPU vs GPU
  - Most of the time CPU is enough - one image at a time, lots of cheap options
  - GPU - video processing, batches of images for popular websites
- Deploying on mobile (e.g., ONNX)
  - keep things simple at the start and use PyTorch