

Data Science Survival Skills



Exercise 8 – Machine Learning II



TensorFlow & Google Colab



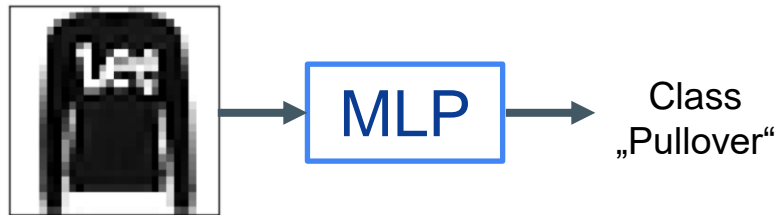
In this exercise and in homework 8, we work with **TensorFlow**.
You can either:

- a) Install TensorFlow in your environment: <https://www.tensorflow.org/install>
- b) Use **Google Colab** which has TensorFlow pre-installed

Today's topics

1) Image classification

Data: Fashion-MNIST dataset



2) Semantic segmentation

Data: BAGLS dataset



Semantic segmentation

**Semantic
Segmentation**



GRASS, CAT,
TREE, SKY

No objects, just pixels

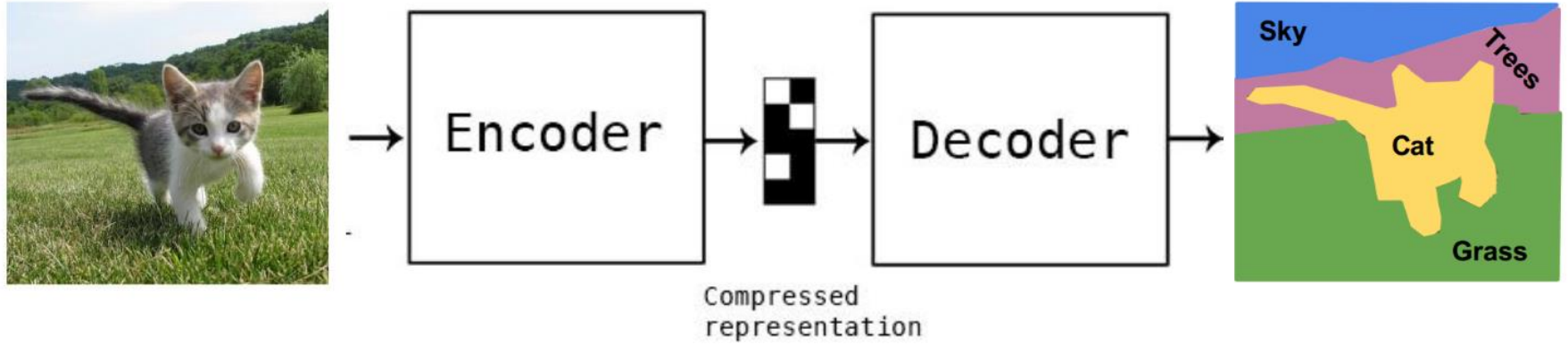
**Classification
+ Localization**



CAT

Single Object

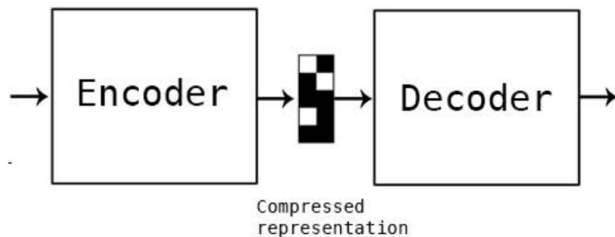
Encoder-decoder network



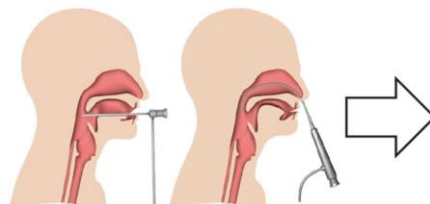
Glottis segmentation



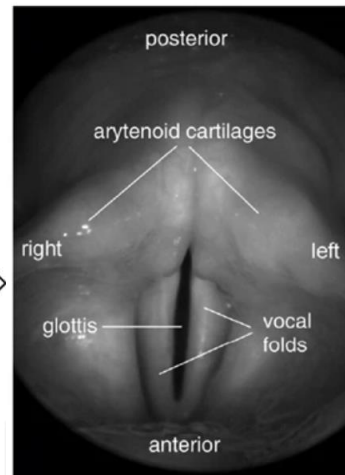
Endoscopic image of
vocal folds & glottis



Glottis

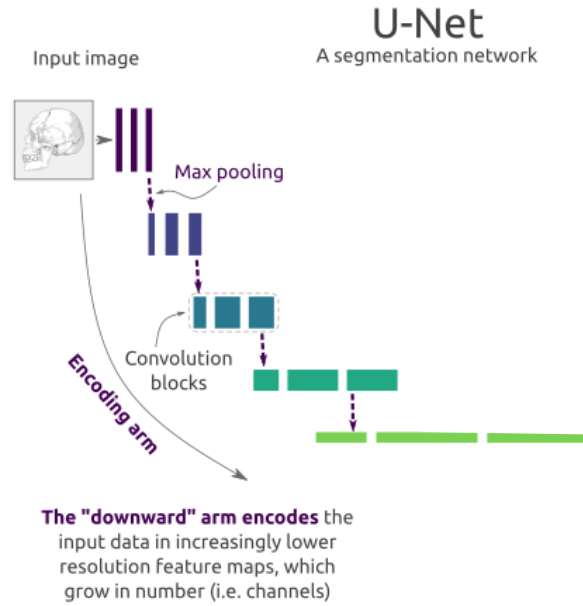


- oral and nasal endoscopes
- different light sources
- different cameras



U-Net

Ronneberger, Olaf, Philipp Fischer, and Thomas Brox. "U-net: Convolutional networks for biomedical image segmentation." *International Conference on Medical image computing and computer-assisted intervention*. Springer, Cham, 2015.



U-Net

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