Week 12 - CNN Tutorial

Vincent Matthys, Amric Trudel
vmatthys, atrudel@student.42.fr

For question concerning the content of this session, contact *vmatthys* by slack or mail.

1   Prerequisites

I suppose you are familiar with the following :

1. Matrix multiplication

2. Fully connected layers (including how to implement them)

2   Material - 80 *min*

All material are coming from the amazing **stanford cs231n** course. This is a reference you have to know.

- slides from cs231n lecture

- lecture notes

Both are redundant. I encourage you to take a close look to the lecture notes, which are pretty clear and detailed.

3   Material for Tensorflow - 30 *min*

video of cs231n lecture 8 : start@21'59 → end@50'44.

This is a pretty detailed video about the key concepts of tensorflow. You can refer yourself to the online documentation for python API here.

4   Some exercices for practice (optional)

You can find in almost any deep learning software one tutorial on MNIST classification using CNN. For exemple, you can find the associated tensorflow tutorial here

4.1   In depth

The exercices are build to master in depth the CNN Q4 of assignment2 for cs231n

4.2   For image classification

Q5 of assignment2 for cs231n

4.3   For text classification and sentiment analysis

Implement model described in [1] in paragraph 2 to :

- analyse sentiment on Movie Reviews

- challenge data 2018 - POSOS

For both of them, you should achieve arround 65 % accuracy without further tuning, using on-the-fly embedding.

To preprocess the data, you can use :

- *tf.keras.preprocessing.text.Tokenizer*

- *sklearn.preprocessing.LabelEncoder*

- *sklearn.preprocessing.OneHotEncoder*

This would likely be the NLP exercice for the practical session on 06/22.

References

[1]   Y. Kim, "Convolutional neural networks for sentence classification", *arXiv preprint arXiv:1408.5882*, 2014.