Prediction of a point movement

BIAI - Project

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Project topic

Our task is to implement a program, which use neural network to predict the change of position of a point on the plane on the basis of previous trajectory of its movement.

Data source

- text file containg coordinates x,y of analized points
- file represents bike ride

Technologies

- Qt (GUI)
- PyTorch
- Python

PyTorch

python™

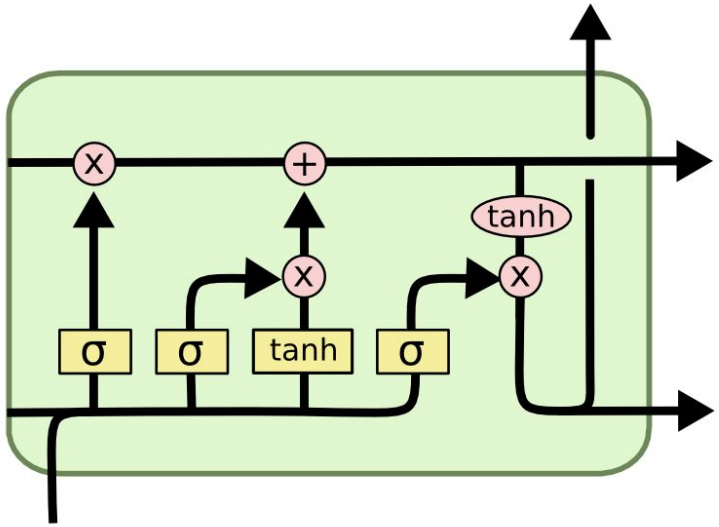
https://teamquest.pl/blog/2025_nowe-qt-5153-lts-platne
https://python.szkola.pl/oprogramowanie/
https://pytorch.org/tutorials/

Work plan

1. Retrieving data from a text file.
2. Normalization of data (to range <-1,1>).
3. Create a class representing neural network.
4. Training a network.
5. Testing a network (prepare predictions).
6. Prepare GUI and show results.

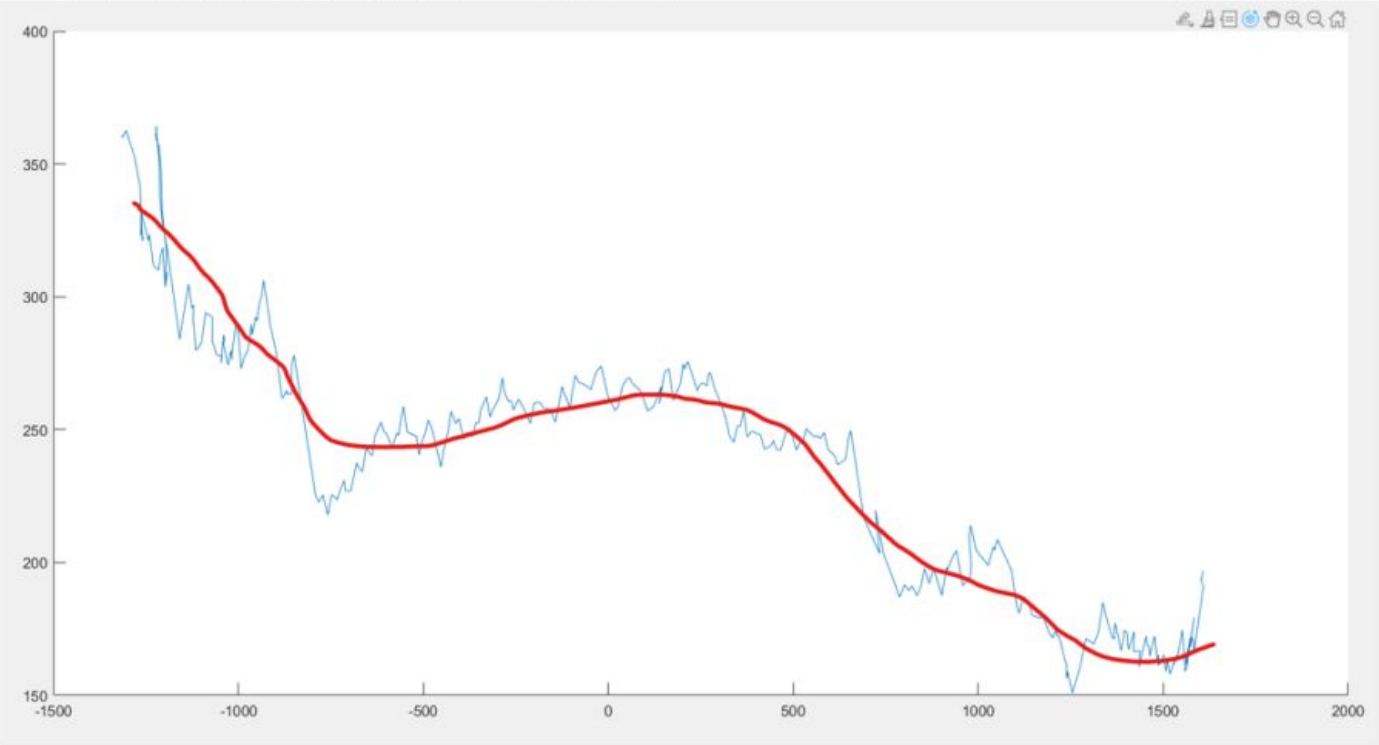
LSTM

Long short-term memory (**LSTM**) - artificial recurrent neural network (RNN) architecture used in the field of deep learning. Unlike standard feedforward neural networks, LSTM has feedback connections.

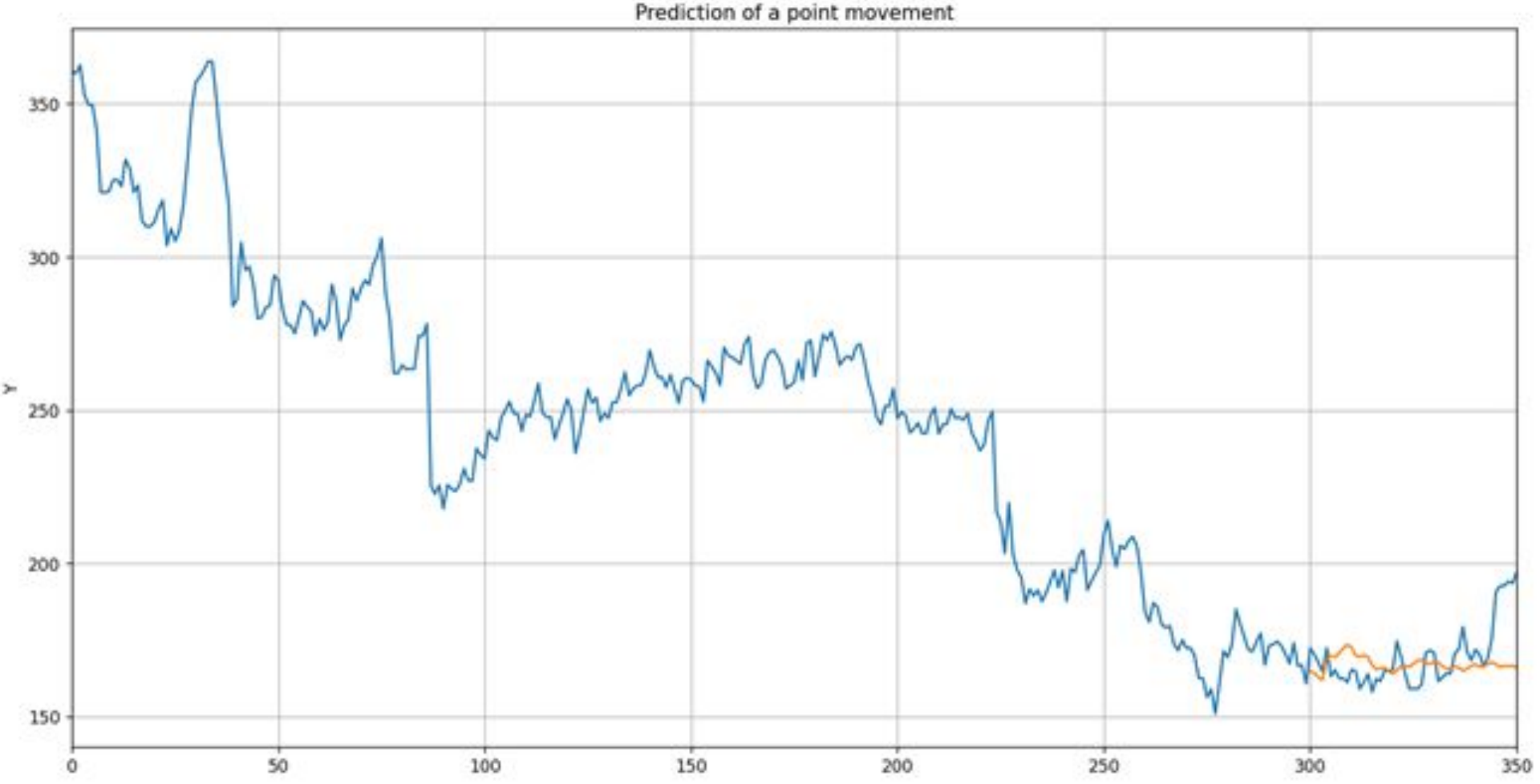


https://colah.github.io/posts/2015-08-Understanding-LSTMs/
https://en.wikipedia.org/wiki/Long_short-term_memory

Expected result



Results for now



Difficulties and Conclusions

Creating predictions for a point movement isn’t as easy as we suppose. At the moment we haven’t got expected results yet, but we’re nearing the desired results.