Tuesday, 12 September 2023

Machine Learning Workshop

Introduction

- Whats your name and where are you come from?
- What is your research about?
- What do you like to do in spare time?
- What do you expect/ want to learn in this workshop?

Creation of pseudocode

- Try to come up with an idea how we gonna structure and create our code?

Data Generation

You can fork repository from https://github.com/PatrikValabek/ML-workshop.git
or
'git clone https://github.com/PatrikValabek/ML-workshop.git'

Generate and save **4** different datasets in this order:

- **Small** dataset
- **Middle** dataset
- **Corrupted** (bad) dataset
- **Large** dataset

Quick Break

Creation and Training of NN

- Creation of NN
- Modify parameters
- Train NN

Comparison of performance of trained NN and MPC

- Load network and set initial condition of compared simulation
- Try to understand why it don't work

Group work (in pairs)

GOAL: Create and sufficiently train NN to "perfectly" mimick MPC

1. Satisfy **input bounds** (try to use different **activation functions**)
2. Satisfy **state bounds** (try with different number of neurons):
    - **Wide** architecture
    - **Deep** architecture
3. Try your champion NN **on other datasets**
4. Create **general NN** that works on most of them

Discussion of findings