Shamil Iakubov : LinkedIn Email : yakubov.sha@gmail.com

Machine Learning experience

- **Top 2% solution in the Kaggle Competition "Lux AI"**: Ranked 19th out of 1186 teams as a solo participant. Team shmyak. Links: Github; Leaderboard. The solution is based on imitation and reinforcement learning off policy actor-critic algorithm.
- **Reinforcement learning algorithms implementation. Github**: Custom training loops implementation for several reinforcement algorithms (TensorFlow): different versions of DQN, categorical DQN, off policy actor-critic algorithms with dueling networks, n-step update, off policy policy gradient correction and other improvements. It uses RAY to distribute calculations and DM Reverb as a data buffer. Some versions of it include sparse nets and residual convolution nets.
- **TF records pipelines preparation**: Data preparation before training using tf.data API for efficient sampling from Google Cloud Storage. See, for example, here.
- **Online courses**: Deep Learning specialization, Machine Learning, Bayesian Statistics.

Other numerical experience

- **Helmholtz-Zentrum in Geesthacht** Geesthacht, Germany
  PhD student *2017 - 2020*
  - **Numerical studies**:
    1. A modeling study of the Wadden Sea biogeochemistry.
    2. A modeling study about controlling factors of the atmosphere - seawater carbon dioxide exchange in the area of the North Sea, in a Jupyter notebooks format. Both studies are computational heavy and based on biogeochemical models implemented in Python 3 and FORTRAN 2003.
  - **Optimization (learning) study**: Building and optimization of biogeochemical models. See, for example, here.
  - **Data analysis**: Visualization and processing of oceanographic data from the North Sea using Pandas, Matplotlib, etc. See, for example, here.
- **Institute of Oceanology** Moscow, Russia
  Research engineer, researcher *2009 - 2017*
  - **Numerical studies**:
    1. Participation in development of a biogeochemical oceanic model. Responsibilities: Add a computationally efficient pH calculation; migrate from FORTRAN 90 to FORTRAN 2003; migrate from Visual Studio solutions to CMake; add Linux support.
    2. Sympagic-Pelagic-Benthic-Model development. A 1-dimensional biogeochemical tracers transport model. The model solves numerically a system of 1-D transport equations in Cartesian coordinates for three domains (ice, water column, and sediments) in the ocean. It is implemented in FORTRAN 2003.
  - **Signal processing study**: Waves Groupiness in the Baltic See study. The study uses cluster analysis to categorize waves to groups and then uses Fourier and Wavelet analysis to study properties and features of these groups.

Programming Skills

- **Languages**: Python (Tensorflow, Keras, Numpy), FORTRAN, LaTeX

Recent publications

- Yakubov, S.; Protsenko, E. Alkalinity Generation in the Coastal Area, the Case of the Wadden Sea. Preprints 2021, 2021020036 (doi:10.20944/preprints202102.0036.v1)
- Yakushev, E.V.; Wallhead, P.; Renaud, P.E.; Ilinskaya, A.; Protsenko, E.; Yakubov, S.; Pakhomova, S.; Sweetman, A.K.; Dunlop, K.; Berezina, A.; Bellerby, R.G.J.; Dale, T. Understanding the Biogeochemical Impacts of Fish Farms Using a Benthic-Pelagic Model. Water 2020, 12, 2384. (doi:10.3390/w12092384)
- Yakubov, S.; Wallhead, P.; Protsenko, E.; Yakushev, E.; Pakhomova, S.; Brix, H. A 1-Dimensional Sympagic–Pelagic–Benthic Transport Model (SPBM): Coupled Simulation of Ice, Water Column, and Sediment Biogeochemistry, Suitable for Arctic Applications. Water 2019, 11, 1582. (doi:10.3390/w11081582)

Education

- **Moscow State University** Moscow, Russia
  Specialist, Oceanography *2003 – 2008*