Mihael Tunik

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https://github.com/mihael-tunik/

Education

2013 — 2017 **Bachelor degree**, *Saint-Petersburg*, Peter the Great St.Petersburg Polytechnic University, departament of applied mathematics and mechanics.

2017 — 2019 **Master degree**, *Saint-Petersburg*, Peter the Great St.Petersburg Polytechnic University, departament of applied mathematics and mechanics.

Master thesis

2019 **Special kernel density estimator for finite sample size conditions**.

Work is dedicated to research of theoretical accuracy of statistical kernel density estimator of special type for finite sample size conditions.

Experience: 3 years 3 months

august 2019 — now **Saint-Petersburg State University, Chebyshev Laboratory**, *engineer-researcher*.

- Work in team on development of special statistical instrument for geo-data analysis based on Gaussian Processes (multi-output GP, sparse GP) written mostly on Python language. Adding new features, refactoring of existing codebase. Research for relevant scientific articles in given subject area.

- Project work on software for solving inverse problems for seismic data. Developing specific approach based on previously developed software. Using Tensorflow/Torch frameworks. Participation in development and testing on real data.

- Development of software for solving Riemann problems, which appear in porous media hydrodynamics. Search for literature and articles, algorithm development and implementation. Created library on C++ for using in Python project via Ctypes.

- Fine-tuning advanced hydrodynamic simulations in Dumux with Bayesian Optimization technics, using botorch. In this project I took part in development of original algorithm and implementation. Also here I worked with experimental dashboards like Tensorboard and building custom UI for developed ML-system with PyQt5.

Skills

For scientific computation: Python (numpy, scipy, matplotlib, Jupyter, torch, keras, autograd), R, Matlab, Mathematica

Mathematical background: statistics and probability theory (random functions and fields), linear algebra, calculus.

Computer science background: Standard course of algorithms and numerical methods, various optimization methods, statistical data analisys, ML: regression of all types, table data classification.

More information and keywords:

- Decent 5-year experience with **Linux** [Ubuntu, Mint], system configuration, work via bash;
- **Git** version control system, managing repositories in **Bitbucket** and **GitHub** (pull-requests, code review and so on), **Notion** for task-tracking, **pytest** for testing;
- Work on project sketches in **Jupyter Notebooks**;
- Running code on servers remotely via ssh, building **Docker** containers, work with everything via **venv**;
- Experience with GPFlow, GPy for work with Gaussian Processes, gradient boosting with **CatBoost**; work skills with **Pandas** and sklearn;
- Advanced work with **LaTeX** for scientific texts and presentations;
- Experience with building up python package from scratch with **setuptools**;
- Experience with **PyQt5**, and also with PyInstaller for bulding binaries;
- Some experience with C/C++ (parallel computations with OpenMP, make-files and CMake, building small .so libs);
- Basic knowledge of PostgreSQL (including pgAdmin and libpq++);
- Basic knowledge of HTTP protocol, Django and FastAPI.

Languages

Russian Native speaker

English Upper-Intermediate