

# 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, department of applied mathematics and mechanics.

2017 — 2019 **Master degree**, *Saint-Petersburg*, Peter the Great St.Petersburg Polytechnic University, department 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 4 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 for geo-data analytics. 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 techniques, 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 analysis, 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 skills with **Pandas** and **sklearn**, experience with **GPFlow**, **GPy** for work with Gaussian Processes, gradient boosting with **CatBoost**;
  - Advanced work with **LaTeX** for scientific texts and presentations;
  - Experience with building up python package from scratch with **setuptools**, managing packages and project installations with **venv** or **Anaconda**;
  - Experience with **PyQt5**, and also with **PyInstaller** for building 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

## Online courses

Stepik October 2022

***Hadoop. System for big data processing.***

Learned basic things about Hadoop ecosystem, including HDFS, MapReduce, HBase and also Apache Spark. Practicing in writing code in Scala as a bonus.

*Result: certificate with distinction, >90% score.*