SHCHUKIN IVAN

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EDUCATION

The Higher School of Economics University - St. Petersburg, master's degree **2022 – 2024**
Applied mathematics and computer science

Novosibirsk State University, bachelor's degree **2017 – 2021**
Mechanics and mathematical modeling

EXPERIENCE

BIOSOFT **Apr 2020 – Jun 2021**
Research associate *Novosibirsk, Russia*

- Developed a mathematical model for the interaction between COVID-19 and human immunity from the initial stage. Enhanced and optimized two existing models of interaction between the human body and COVID-19 by integrating new features and more complex logic, leading to more realistic simulation of the virus's impact.
- Transformed the developed models into functional tools using Python, C++ and specialized software bioUML, thereby ensuring more efficient interaction with the models for further research.
- As part of the work completed, contributed to the writing of two publications: Multicompartmental Mathematical Model of SARS-CoV-2 Distribution in Human Organs and Their Treatment and On the Essential Role of SARS-CoV-2 Localization in the Nasopharynx and Intestines in the Pathogenesis of COVID-19
- Conducted an in-depth analysis of the bioUML source code, carried out an extensive search for potential errors, and successfully resolved identified shortcomings, improving the stability and functionality of the software.

PROJECTS

Mental Illness Classifier | *Python, Scikit-learn, PyTorch, TensorFlow+Keras GitHub* **2023**

- Implemented various machine learning algorithms, including logistic regression, XGBoost, CatBoost, LightGBM, as well as LSTM, GRU neural networks, and the BERT LLN-model with Huggingface for solving the problem of multiclass classification of mental disorders based on textual patient data.
- Conducted a thorough analysis of classification quality metrics, including Precision, Recall, F1-score, and Accuracy, and identified the LightGBM model as the most effective, with prediction accuracy of 93%, which is on average 4% higher than existing solutions.

Generative Neural Network for Creating Cat Images | *Python, NumPy, Pandas, PyTorch GitHub* **2023**

- Implemented a generative neural network with a Variational AutoEncoder (VAE) architecture.
- Optimized model hyperparameters, reducing reconstruction error and KLD divergence.

SKILLS

- Languages: Python, C++, Haskell, Bash, SQL.
- Technologies: Pandas, NumPy, Scikit-learn, PyTorch, TensorFlow+Keras, LATEX, Docker, Git.

ADDITIONAL EXPERIENCE

- Led large-scale events with over 500 participants, ensuring their successful execution and high appraisal. Made a significant contribution to the modernization of university buildings, creating comfortable educational and creative spaces. Directed a student initiative group at the faculty, as well as a student construction squad. Additionally, actively volunteered at university-wide events, contributing to the formation of a positive educational environment.
- Served as a mentor for two groups of first-year students, ensuring a smooth adaptation and successful grasp of mathematical disciplines.
- Participated in the CompTech-2019 hackathon as part of a team. My tasks included website parsing, aggregating the gathered data into a CSV formatted table, and creating a presentation website using CSS and React.