Pavel Repnikov

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Location: Moscow, Russia

TECHNICAL SKILLS

Languages	:	C++, Python, SQL
Frameworks	:	Unreal Engine, Unity, Pytorch
Libraries	:	numpy, pandas, PySpark, Greenplum, XGBoost, LightGBM, CatBoost, numba, sklearn, geopandas, SciPy, PySR, PyClustering,Optuna

WORK EXPERIENCE

Data Scientist Intern   Oct 2023 – Present
Sberbank, Risk Modeling Department   *Moscow, Russia*

- A model for determining the high probability of a client entering bankruptcy status
- A model for detecting fraud in consumer loans
    * the full cycle of model development
    * terms of reference, data collection
    * model development
    * communication with the customer of the task
    * preparing the model for production
- Geolocation data. Geolocation data in fraud prevention
- Behavior modeling. Probabilities of events as a new way of explaining incidents
- Time series forecasting
- Working with classic tabular data
- Building datasets from multiple data sources

EDUCATION

Lomonosov Moscow State University   2022-2024
MSc in Physics,Chair of Mathematical Modeling and Computer Science   *Moscow, Russia*

Lomonosov Moscow State University   2018-2022
BSc in Physics,Chair of Mathematical Modeling and Computer Science   *Moscow, Russia*

COMPLETED PROJECTS

Forecasting global population dynamics   *Python, numba, geopandas*   code

- Partial differential equations as a way to predict the population on the globe
- Modification of the classical formulation of the problem taking into account spatial components
- A solution on a set of arbitrary shape

Credit Scoring on a synthetic dataset   *Python, XGBoost, LightGBM, CatBoost, PyClustering, SciPy*   code

- The divide and conquer principle. Building models independently for different years
- Automatic feature generation
- Testing statistical hypotheses
- Clustering of tabular data

Furniture object detection   *SQL,C#, Unity, Python, Pytorch*   code

- Creating a synthetic dataset using Unity
- Object detection finetuning using Pytorch

<u>Bayesian Decision Making as a Theoretical Basis for a New Look at Fuzzy Logic Control</u>   *Python, Pytorch*   ⊙code

- Creating a new machine learning white-box model from scratch
- Creating a fuzzy inference system based on statistical inference
- Solving a system of integral equations using Pytorch

<u>Machine learning of noise filtering of vibroacoustic linearly distributed sensor data</u>   *Python, TensorFlow*   ⊙code

- Creating an optimal signal filter for recognizing different types of activity

▶ **<u>Galton board modeling</u>**   *C++,Qt*   ⊙code

- Demonstration of the central limit theorem
- Creating a desktop application from scratch
- Embedding an engine for physical simulation

PROJECTS IN DEVELOPMENT

Adaptive metabolic model   Aug 2023 – Present

- Monte Carlo simulation
- Time series clustering

Adaptive control system with fuzzy logic based on Bayesian inference   Aug 2022 – Present

- The invention of the AI alignment method in RL
- Cross-entropy method for reinforcement learning
- Creating a greedy optimization algorithm for physical simulation
- Creating an analogue of the gradient descent algorithm in the function space