

# Pavel Repnikov

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Location: Moscow, Russia

## TECHNICAL SKILLS

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





## WORK EXPERIENCE

<b>Data Scientist Intern</b> <i>Sberbank, Risk Modeling Department</i>	Oct 2023 – Present <i>Moscow, Russia</i>
<ul style="list-style-type: none"><li>• A model for detecting fraud in consumer loans<ul style="list-style-type: none"><li>* the full cycle of model development</li><li>* terms of reference, data collection</li><li>* model development</li><li>* communication with the customer of the task</li><li>* preparing the model for production</li></ul></li><li>• Geolocation data. Geolocation data in fraud prevention</li><li>• Behavior modeling. Probabilities of events as a new way of explaining incidents</li><li>• Working with classic tabular data</li><li>• Building datasets from multiple data sources</li><li>• Time series forecasting</li></ul>	

## EDUCATION

<b>Lomonosov Moscow State University</b> <i>MSc in Physics, Chair of Mathematical Modeling and Computer Science</i>	2022-2024 <i>Moscow, Russia</i>
<b>Lomonosov Moscow State University</b> <i>BSc in Physics, Chair of Mathematical Modeling and Computer Science</i>	2018-2022 <i>Moscow, Russia</i>

## COMPLETED PROJECTS

<b><u>Forecasting global population dynamics</u></b>	<i>Python, numba, geopandas</i>	 <a href="#">code</a>
<ul style="list-style-type: none"><li>• Partial differential equations as a way to predict the population on the globe</li><li>• Modification of the classical formulation of the problem taking into account spatial components</li><li>• A solution on a set of arbitrary shape</li></ul>		
<b><u>Credit Scoring on a synthetic dataset</u></b>	<i>Python, XGBoost, LightGBM, CatBoost, PyClustering, SciPy</i>	 <a href="#">code</a>
<ul style="list-style-type: none"><li>• The divide and conquer principle. Building models independently for different years</li><li>• Automatic feature generation</li><li>• Testing statistical hypotheses</li><li>• Clustering of tabular data</li></ul>		
<b><u>Furniture object detection</u></b>	<i>SQL, C#, Unity, Python, Pytorch</i>	 <a href="#">code</a>
<ul style="list-style-type: none"><li>• Creating a synthetic dataset using Unity</li><li>• Object detection finetuning using Pytorch</li></ul>		
<b><u>Bayesian Decision Making as a Theoretical Basis for a New Look at Fuzzy Logic Control</u></b>	<i>Python, Pytorch</i>	 <a href="#">code</a>

- 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

### **Machine learning of noise filtering of vibroacoustic linearly distributed sensor data**

*Python, TensorFlow*

 [code](#)

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

### **Galton board modeling**

*C++, Qt*

 [code](#)

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

## PROJECTS IN DEVELOPMENT

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### **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