Igor Kuznetsov

Oxford, United Kingdom

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Experience

Oxa   **Feb 2023 - present**

Senior Research Engineer   *Oxford, United Kingdom*

- Pioneer in the development and validation of cutting-edge reinforcement learning (RL) algorithms tailored for autonomous driving scenarios in simulation environments.
- Steered the successful delivery of simulation scenarios for an external client, showcasing strong project management and client liaison skills.
- Executed the migration of machine learning pipelines to Google Cloud Platform (GCP), resulting in a 6x throughput increase in scenario generation.

Giant.AI   **Feb 2020 – Jan 2023**

Machine Learning Engineer   *St. Petersburg, Russia*

- Engineered state-of-the-art model-free RL algorithms tailored for continuous control, optimizing performance for both simulated and real-world humanoid robots. The application of RL resulted in a 15% acceleration in robot speed.
- Implemented model-based RL algorithms, increased agents' sample efficiency in simulation in order of magnitude.
- Deployed imitation learning approaches in both simulation and real-world scenarios, contributing to the production phase deployment of the algorithm on real robots.
- Developed modality fusion techniques for representation learning from multiple sensors, resulting in a 3% improvement in accuracy metrics within the simulation environment.

JetBrains Research   **Jul 2019 – Jan 2020**

Intern   *St. Petersburg, Russia*

- Participated in NeurIPS "Learn To Move" Reinforcement Learning Challenge, took 7th place.
- Engineered a multiprocessing RL framework designed for distributed training, demonstrating expertise in scalable and efficient model development.
- Conducted research on long-term memory mechanisms for reinforcement learning, which resulted in publication in A* conference.

Insilico Medicine   **Dec 2017 – Apr 2019**

Data Scientist   *St. Petersburg, Russia*

- Implemented convolutional and sequence models for molecular properties prediction, significantly improving prediction metrics for multiple molecular datasets.
- Tested novel graph-convolutional based models (MPNN, GAT).
- Developed an internal chemical library and database (MongoDB), implementing the pipeline of molecular scoring, and accelerating prediction time by 45%.

Selected Publications

Safer Reinforcement Learning by Going Off-policy: A Benchmark   **In Review**

Igor Kuznetsov

Guided Exploration in Reinforcement Learning via Monte Carlo Optimization   **AAMAS 2024**

Igor Kuznetsov   *Poster*

Solving Continuous Control with Episodic Memory   **IJCAI 2021**

Igor Kuznetsov, Andrey Filchenkov   *Main Track*

Conditioning of Reinforcement Learning Agents and its Regularization   **ICML 2020**

Arip Asadulaev, Igor Kuznetsov, Gideon Stein, Andrey Filchenkov   *Workshop*

Education

ITMO University   **2017-2021**

B.E. in Software Engineering   *St. Petersburg, Russia*

Software

OPRL: A Library for Distributed Off-policy Reinforcement Learning Algorithms in PyTorch   *GitHub*

prototypical-networks-tf: TensorFlow implementation of Few-shot learning models.   *GitHub*

Technical Skills

Machine Learning / Deep Learning: PyTorch, TensorFlow, NumPy

Python backend stack: FastAPI, Django, Flask, ElasticSearch, RabbitMQ, Postgres, MongoDB, Docker

Other technologies: CSS/HTML, JavaScript