Nikolay Nikolov

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Education

Oct 2014 -Sep 2018 **Imperial College London**, *BEng & MEng Electronic and Information Engineering*
First Class Honors *74.3/100%*; GPA: *4.0/4.0*
Courses: *Robotics* ▪ *Machine Learning* ▪ *Computer Vision* ▪ *Control* ▪ *Operating Systems* ▪ *Compilers* ▪ *OOP* ▪ *Mathematics* ▪ *Networks* ▪ *Databases* ▪ *Algorithms and Data Structures*

Sep 2017 -Sep 2018 **ETH Zurich**, *MEng Exchange Student*
Courses: *DL* ▪ *ML* ▪ *Probabilistic AI* ▪ *Dynamic Programming and Optimal Control* ▪ *Computer Vision*

Experience and Research

Dec 2018 -Dec 2022 **Wayve**, *AI Applied Scientist*, London, UK
Developed new autonomous driving AI methods and delployed on a fleet in central London
- Part of the initial seed team of 20. Helped build the tech of the company to a series B unicorn
- Developed the first end-to-end offline Reinforcement Learning method that can drive in complex urban real-world environments such as London
- Helped engineer and develop the core company Imitation Learning method and technology
- Contributions to reseach such as *learning from human feedback, data bias, data filtering, prioritized data selection, temporal modelling, causal confusion, computer vision, multitask learning*
- Engineered core AI systems for training, monitoring and deployment

Sep 2017 -Sep 2018 **Learning & Adaptive Systems Group**, *Research Assistant*, ETH Zurich
- Supervisor: *Prof. Andreas Krause*; Paper published at ICRL 2019
- Developed a new stochastic Reinforcement Learning method that beats state-of-the-art results

July 2017 -Sep 2017 **Ocado Technology**, *Robotics Research Intern*, Hatfield, UK
Deep Reinforcement Learning for robot picking
Implemented a deep RL system for picking objects from a basket and deployed on a UR10 robotic arm

Jan 2017 -Sep 2017 **Dyson Robotics Lab**, *Research Assistant*, Imperial College London
Bayesian Fusion for Volumetric SLAM based on Occupancy Mapping
- Supervisor: *Prof. Stefan Leutenegger*. Paper published at ICRA 2018
- Developed and implemented 3D volumetric reconstruction method from depth camera

June 2015 -Dec 2016 **Aerial Robotics Lab**, *Research Assistant*, Imperial College London
Built and programmed a bimodal robot that can walk as hexapod and fly as quadcopter

Publications

PDF **Urban Driving with Conditional Imitation Learning.** *J Hawke*, R Shen*, C Gurau*, S Sharma*, D Reda*, N Nikolov*, P Mazur*, S Micklethwaite*, N Griffiths*, A Shah*, A Kendall*.*
IEEE International Conference on Robotics and Automation (ICRA), 2020

PDF **Information-Directed Exploration for Deep Reinforcement Learning.**
Nikolay Nikolov, Johannes Kirschner, Felix Berkenkamp, Andreas Krause.
International Conference on Learning Representations (ICLR), 2019

PDF **Efficient Octree-Based Volumetric SLAM Supporting Signed-Distance and Occupancy Mapping.** *Emanuele Vespa, Nikolay Nikolov, Marius Grimm, Luigi Nardi, Paul H J Kelly, Stefan Leutenegger.* IEEE International Conference on Robotics and Automation (ICRA), 2018

Skills

Programming	*Python* ▪ *C/C++* ▪ *Java* ▪ *Shell* ▪ *JavaScript* ▪ *SQL* OOP, concurrent programming, algorithms, data structures, vectorized computation
AI	Deep Learning, Reinforcement Learning, Computer Vision, Language Models, Generative AI, Imitation Learning, Supervised Learning
Deep networks	implementation, training, debugging, evaluation, fine-tuning, reproducing literature
ML Modelling	Transformers, Diffusion models, CNNs, GANs, VAEs, Adversarial training, Ensemble models, Uncertainty models
MLOps	cloud training, cloud deployment, distributed training, training speed optimization
Data	Big Data, cleaning, analysis, collection, filtering, noisy data, biased datasets
Software	PyTorch ▪ PyTorch Lightning ▪ Hugging Face ▪ PySpark ▪ pandas ▪ numpy ▪ jupyter ▪ matplotlib ▪ WandB ▪ PyArrow ▪ OpenCV ▪ pybind ▪ git ▪ docker ▪ Linux ▪ bazel ▪ ...
Languages	English ▪ Bulgarian ▪ Russian

Selected Projects

2022	Breaking causal confusion in data in autonomous driving
2022	Data manipulation for learning diverse skills in autonomous driving
2022	Automated data analysis, filtering and balancing for autonomous driving
2021	Offline Reinforcement Learning for autonomous driving in central London
2020	Learning from human feedback in autonomous driving
2019	Imitation Learning for autonomous driving in central London
2018	Open-source Deep Reinforcement Learning Library
2017	Deep Reinforcement Learning for robot picking
2017	Autonomous indoor robot mapping, localization and navigation
2016	C90 to MIPS compiler

Online Courses

CS294: Deep Reinforcement Learning, Sergey Levine, UC Berkeley

CS231n: Deep Learning, Andrej Karpathy, Stanford

CS229: Machine Learning, Andrew Ng, Stanford

Honors and Affiliations

2007-Present	Aikido - 1st Dan Black Belt	
2014-2018	Imperial College Robotics Society	
2015-2016	Imperial Entrepreneurs	
2013	STEM distinction by the President of Bulgaria	*Sofia, Bulgaria*
2013	International Young Physicists Tournament - Bronze Medal	*Taipei, Taiwan*