

# Nikolay Nikolov

AI Scientist and Engineer

📞 (+359) 877 330 851  
✉ niko.b.nikolov@gmail.com  
🌐 nikonikolov.github.io  
🔗 nikonikolov  
in nikobnikolov



Reinforcement Learning, Robotics, Computer Vision, LLMs

## Education

- Oct 2014 **Imperial College London**, BEng & MEng Electronic and Information Engineering
- Sep 2018 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 **ETH Zurich**, MEng Exchange Student
- Sep 2018 Courses: DL ▪ ML ▪ Probabilistic AI ▪ Dynamic Programming and Optimal Control ▪ Computer Vision

## Experience and Research

- Jul 2023 **Freelance AI Consulting**, Sofia, Bulgaria
- Present
  - Rendering architecture designs with diffusion models
  - Vision-language-action (VLA) models for robot picking
  - Code generation with LLMs
  - Reinforcement Learning for robotics warehouse operations
- Dec 2018 **Wayve**, AI Applied Scientist, London, UK
- Dec 2022 *Developed new autonomous driving AI methods and deployed 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
  - Led the development of 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 foundational models for Imitation Learning
  - Contributions to research such as *learning from human feedback, advanced data filtering, prioritized data selection, temporal modelling, causal confusion, computer vision, multitask learning*
  - Engineered core AI systems for training, monitoring and deployment
- Sep 2017 **Learning & Adaptive Systems Group**, Research Assistant, ETH Zurich
- Sep 2018
  - 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 **Ocado Technology**, Robotics Research Intern, Hatfield, UK
- Sep 2017 *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 **Dyson Robotics Lab**, Research Assistant, Imperial College London
- Sep 2017 *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

## 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

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## Skills

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

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## Selected Projects

- 2023 3D architectural model rendering with Generative AI
- 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

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## Online Courses

- CS294: Deep Reinforcement Learning, Sergey Levine, UC Berkeley
- CS231n: Deep Learning, Andrej Karpathy, Stanford

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## 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*