

Berk Can Özmen

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SUMMARY

Machine learning engineer and software developer specializing in building end-to-end ML systems and applications. Strong background in Python, PyTorch, deep learning, computer vision, reinforcement learning, and scientific computing.

SKILLS

Programming:	Python, C++, JavaScript, SQL
Machine Learning:	PyTorch, Scikit-learn, Deep Learning, Computer Vision, Reinforcement Learning
Sci. Computing:	NumPy, SciPy, Pandas, GeoPandas, Numba, CUDA, Matplotlib, Plotly
Backend:	Django, FastAPI, REST APIs, PostgreSQL, SQLite, Celery
MLOps:	Git, Docker, Linux, Uvicorn, TensorBoard, Testing, Cloud Deployment
Languages:	English (C2), German (C1), Turkish (Native)

EXPERIENCE

06/2025 - Present Berlin	Freelance ML Engineer Self-Employed 🌐 bcozmen.com - Develop web applications, full-stack machine learning pipelines, and data analysis tools for clients across various industries. 🔗 bcozmen.com/sim Developed an efficient climate simulation framework for an agent-based project, implementing and evaluating a range of A*-like path-planning algorithms. 🔗 bcozmen.com/autocomplete Code and text autocomplete service Python · Django · FastAPI · Qwen · Docker · Cloud Deployment 🔗 bcozmen.com/mlops Full-stack machine learning pipeline for kernel and neural density regression Python · Scikit-learn · PyTorch · FastAPI · Docker · PostgreSQL · Cloud Deployment 🔗 bcozmen.com/rag Wikipedia RAG system Python · FastAPI · Qwen · Cloud Deployment
09/2023 - 09/2024 Berlin	Machine Learning Engineer Fraunhofer SIRIOS PyTorch · TensorBoard · OSMnx · GeoPandas · Wetterdienst - Built a geospatial simulation environment for reinforcement learning, processing real-world road networks, traffic patterns, weather, and incident data to model spatially constrained decision-making. - Developed RL-based autonomous decision-making policies, achieving optimal solutions on analytically solvable scenarios and solutions within operational constraints on complex cases. - Designed reward functions and a simulation-based evaluation framework to benchmark policies across diverse scenarios and identify failure cases.
09/2021 - 04/2023 Berlin	Computer Vision & Robotics Science of Intelligence C++ · OpenCV · ROS 🌐 bcozmen.com/scioi - Collaborated within a research team to develop an autonomous robotic system combining a camera, robotic arm, and soft hand to solve a lockbox puzzle. - Implemented a computer vision pipeline that leverages the robotic arm's movement to generate 3D reconstructions and build a model of the environment. - Designed feedback loops between the robotic arm and the computer vision pipeline, enabling intelligent exploration of the environment and adaptive interaction based on observations of the lockbox puzzle.
2019 - 2021 Berlin	Internship at Neural Information Processing Group Technische Universität Berlin Numba · NumPy · DEAP · neurolib - Implemented a simulation environment for FitzHugh-Nagumo based resting-state brain network models, using empirical structural connectivity and functional connectivity data. - Explored the parameter space of the FitzHugh-Nagumo model using genetic algorithms and Bayesian optimization with Gaussian processes.

09/2017 - 04/2019 Berlin	Software Developer Ten8 Selenium · BeautifulSoup · requests - Developed and maintained the company's website and internal application for a Berlin-based startup. - Developed a web scraping tool to collect and process initial coin offering (ICO) data, automatically alerting the team to new and potentially interesting opportunities.
2013 - 2016 Istanbul	FRC Team Member & Leader Inanc Mechatronics Club - Designed and built competition robots for the FIRST Robotics Competition (FRC), serving as team leader in 2015 and managing the technical team of 10 members. - Built robots entirely in-house from design to competition, performing 3D CAD design, welding, machining/milling, mechanical assembly, and programming for both teleoperated and autonomous operation.

PROJECTS

2024 - Present	Deeppy PyTorch · TensorBoard - Modular deep learning training framework designed for fast prototyping and experimenting - Clean separation of model, data, optimizer, scheduler and training logic with automated logging, checkpointing, automatic mixed precision and other efficiency features - Clean separation of GPU and CPU space with automatic device placement, memory management and buffer support for large datasets - Developed with feedback from practical experience, including my own work and master thesis.	 bcozmen/deeppy
2022 - Present	Agent-Based Neuro-Evolution PyTorch · CUDA - Long-term personal research project investigating neuroevolution in agent-based environments without an explicit loss function. - Developed a physics-based environment in which agents evolve neural network controllers to survive and adapt to their environment. - Investigated low-dimensional parameterizations of agent behavior using message-passing graph neural networks, along with non-destructive crossover and mutation operators for neural network controllers. - Aims to understand the emergence of complex behaviors in a multi-agent system and how the selection pressure drives novel strategies that cannot be designed through explicit loss functions.	 bcozmen/abne
2025	r-hash-SANE Deeppy - A transformer-based rotation-equivariant neural network for learning NeRF latent spaces. - Extension of the SANE architecture to hash-grid NeRFs	 bcozmen/r-hash-SANE

EDUCATION

2026 Berlin	M.Sc. Computer Science , est. 1.3 (3.8/4.0) Technische Universität Berlin - Thesis: Interpreting NeRF Weights Across Architectures with Graph Meta-Networks for Geometry and Appearance Attribution - Supervisor: Prof. Dr. Olaf Hellwich	 bcozmen/master_thesis
2021 Berlin	B.Sc. Computer Science , 1.7 (3.5/4.0) Technische Universität Berlin - Modelling Functional Connectivity in Health and Psychiatric Disorders Thesis Grade: 1.3 - Supervisor: Prof. Dr. Klaus Obermayer	 bcozmen/bsc_thesis