Alibek Erkabayev

Senior Computer Vision Engineer · AR · 3D Vision · Real-Time Vision Systems · Edge AI

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Summary

Computer vision engineer with 6+ years of experience building real-time vision systems for industrial inspection, robotics, AR and edge AI — from research prototype to production on cloud and edge hardware. Expertise spans 2D/3D computer vision, object detection, tracking, visual localization and performance optimization on resource-constrained devices.

Experience

Senior Computer Vision Engineer — CDMVision Mar 2026 – Present

Full-time

- Designing and optimizing real-time computer vision systems for AR-based industrial inspection and dimensional validation.
- Develop a C++ core computer vision engine for industrial quality control and defect detection.
- Optimize CPU/GPU usage for low-latency processing.
- Integrate algorithms into Unity applications across Windows, macOS, iOS and Android, with on-site field testing.

Founder & Computer Vision Engineer — Bekai Vision Jul 2018 – Present

Self-employed, remote · Independent CV & robotics studio for freelance projects between full-time roles

- Optimized vision models for cloud and edge via quantization and TensorRT, achieving a 60% reduction in system latency.
- Automated scalable ETL and data-collection pipelines in Python, cutting dataset preparation from days to hours.
- Delivered technical consulting and backend architecture for AI-driven applications for global clients.

Web-AR.Studio Nov 2021 – Feb 2025

Remote · Team Lead – Computer Vision Department; Computer Vision Engineer

- Led a cross-functional engineering team delivering production-ready AR experiences.
- Engineered a real-time GPU-accelerated image pipeline in C++ and WebAssembly for high-precision positioning and mapping in web environments.
- Implemented feature detection, tracking and SLAM components for markerless AR.

Machine Learning Engineer — UZAKTA Bilişim ve Tasarım Ltd. Şti. Feb 2019 – Oct 2021

Istanbul

- Built a Flask-based management interface and high-speed socket-based communication between NVIDIA Jetson edge devices and client systems.
- Implemented Conditional and Markovian GANs for obstacle clearance, trained on real-world datasets.
- Evaluated CNN architectures and image resolutions in controlled experiments to balance model accuracy and inference speed.

Researching Trainee, ROBOTIC Lab — Yıldız Technical University Jun 2017 – Sep 2017

- Worked with FPGA platforms to design and test custom digital logic circuits.

Selected Projects

- **AI Interview Judge** — Automated interview evaluation system: C++ (OpenCV) for real-time slide detection, Python (FastAPI/LLM) for multimodal reasoning and grading. GitHub
- **VIO-SLAM Assignment** — Visual-inertial odometry implementation and evaluation using the Basalt framework on EuRoC MAV datasets. GitHub
- **Smart-Counter** — People counting system for edge devices, using C++, OpenCV, ONNX Runtime and YOLOv8, with a real-time analytics dashboard. GitHub
- **Smart Asset Search** — Semantic video retrieval using CLIP/SigLIP embeddings and a FAISS vector database for natural-language queries. GitHub
- **ImageCleaning** — Combined Pix2Pix conditional GAN and TecoGAN super-resolution networks. GitHub

Skills

Perception: object detection, segmentation, tracking, pose estimation, visual localization

3D vision: depth, SLAM / VIO, feature matching

Deployment: TensorRT, ONNX, quantization, NVIDIA Jetson, real-time GPU pipelines

AR & web: C++ → WebAssembly, WebGL / OpenGL ES

Languages & tools: Python, C++, JavaScript, PyTorch, TensorFlow, OpenCV, ROS, Docker, FastAPI, Git

Education

MS, Computer Science — Konya Teknik Üniversitesi — In progress
BS, Computer Science — Yıldız Technical University — 2021

Certifications & Achievements

- **Yandex Cup 2025 – International Algorithms Championship** — Yandex (Jan 2025)
- **Data Scientist Associate**, **Data Engineer** — DataCamp (2025)
- MLOps Concepts, CI/CD for Machine Learning, ETL and ELT in Python, Introduction to Docker — DataCamp (2025)
- AWS Machine Learning Foundations — Udacity (2021)

Languages

Russian, Turkish, Uzbek, Turkmen (native) · English (upper-intermediate) · German (basic)