Aidar **Khatiullin**

Senior Software Engineer (C++/Python) · Computer Vision Systems

Novi Sad, Serbia & Remote

khatiullin@gmail.com | May, 1994 | gofff | khatiullin

Summary

Senior Software Engineer (C++/Python) with 10+ years of experience in computer vision and production systems. Worked end-to-end on camera-based pipelines, from data collection and model training to deployment and long-term support.

Skills

Core Engineering	C++, Python, performance tuning (profiling, multithreading/multiprocessing, assembly, SIMD/SSE/AVX), cross-platform development, systems design
Computer Vision & ML	Image processing, object detection, segmentation, keypoints, boosting trees and feature extraction, motion analysis, OCR, automatic labeling, PyTorch, OpenCV, NumPy, scikit-learn, scikit-image, YOLO, UNet, R-CNN, SAM, CVAT, Roboflow
Delivery & Operations	FastAPI/Flask, Docker, CMake, Poetry, Git, GitHub Actions, Pytest, Gtest, Sphinx, QA
Business & Product Context	Ownership, engineering trade-offs, budgeting, mentorship, stakeholder communication, planning
Languages	English (Upper-intermediate), Serbian (B2), Russian (native)

Work Experience

Rescope

Jun. 2025 – Jan. 2026

Lead Computer Vision Engineer & Consultant — *San Francisco, US, Remote*

Early-stage startup focused on AI-driven analysis of buildings and architectural data.

- Designed and implemented a building segmentation pipeline from satellite imagery using PyTorch, combining SAM-based masks, edge refinement, and geometry-aware fitting with primitive shapes.
- Built a PDF layout processing pipeline for extracting structured building data, combining YOLO-based detection, raw PDF vector data extraction, image-based post-processing, and LLM APIs for semantic interpretation.
- Implemented floorplan segmentation solutions for both vector and raster data, including vector preprocessing, alignment of multiple floorplan representations, graph-based heuristics, and U-Net-based segmentation for raster images.
- Collected and prepared three datasets (each ∼1,000 images), including data extraction from PDFs, integration with Mapbox, OpenStreetMap, and Azure Maps, annotation guidelines design, supervision of manual labeling, and training of auto-labeling models.
- Wrapped computer vision pipelines into backend services using FastAPI, exposing inference and data processing via production-ready REST APIs.

ABBYY (CoreOCR Team)

Nov. 2021 - Oct. 2024

Research Engineer & Principal C++ Developer — *Novi Sad, Serbia, Hybrid*

Global technology company specializing in document processing and OCR.

- Developed feature extractors and a boosting-based classifier, together with a lightweight BiLSTM model, to improve text layout analysis, including garbage/non-text filtering, word boundary detection, and line spacing recognition. This resulted in a 3–5% overall recognition quality improvement and more than 10% improvement on low-quality documents and complex layouts.
- Contributed to memory footprint reduction and runtime performance optimization of the OCR engine through profiling, refactoring inference components, and careful memory management in production inference pipelines.
- Improved robustness and precision of language-related components by tuning classical (non-LLM) language models and refining heuristic post-processing for noisy and ambiguous recognition results.
- Investigated and fixed a critical AVX-related bug by analyzing crash dumps from ARM-based macOS builds and debugging C++ code with gdb, identifying SIMD-specific issues in cross-platform execution.

DataNerdsAI

Nov. 2018 - Nov. 2021

Head of Computer Vision & Senior Computer Vision Engineer — *Moscow, Russia, On-site*

Computer vision consultancy delivering applied AI solutions for industrial domains.

- Built camera-based systems including harvester action recognition, license plate recognition (LPR), truck detection, and cargo fullness estimation under harsh outdoor conditions and limited computational resources.
- Developed and deployed computer vision pipelines using RGB, depth (Intel RealSense), drone, and satellite imagery with YOLO and R-CNN models, edge deployment on NVIDIA Jetson, and full ownership of data preparation and annotation workflows using LabelMe and CVAT.

Intelligent Security Systems *Oct. 2016 - Nov. 2018*

Computer Vision Researcher & C++ Developer *Moscow, Russia, On-site*

Engineering company focused on computer vision–based security solutions.

- Improved license plate recognition (LPR) accuracy using classical computer vision techniques, including curve- and shape-based analysis, template matching, feature extraction, and feature-based classification without neural networks.
- Performed low-level performance optimization of LPR and image processing pipelines in C++, including multithreading and SIMD vectorization (SSE) of core operations such as affine transforms, geometric corrections, and binarization.
- Extended LPR pipelines to cargo and railway carriage number recognition, handling broken symbols, unaligned text, perspective distortions, and multi-camera result matching.

Small Local Business in Serbia *Nov. 2024 - Jun. 2025*

Owner / Operator *Novi Sad, Serbia, On-site*

- Direct responsibility for running and operating a small business, including hiring, payroll, taxes, cost control, and day-to-day operations.
- Hands-on experience making decisions under financial, legal, and operational constraints, with full accountability for outcomes.

Education

Lomonosov Moscow State University

Bachelor's and Master's Degrees in Computer Science *2012 – 2018*

- Faculty of Computational Mathematics and Cybernetics, Graphics and Media Lab.

Publications

Fast Occlusion Filling Method for Multiview Video Generation

A. Khatiullin, M. Erofeev, D. Vatolin. *3DTV Conference, 2018.*

Software tool for automatic multiview video generation

A. Khatiullin *Registered software, RF, 2019.*