

Vlad Voropaev

Computer Vision Engineer | Industrial Video Analytics | Detection, Tracking & Pose Estimation

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SUMMARY

Computer Vision Engineer with 4+ years of hands-on experience designing, building, and evaluating end-to-end industrial video analytics and applied machine learning systems. Built and delivered multi-camera safety solutions spanning dataset design, model training, object tracking, pose-based event logic, RTSP integration, field testing, and paid client customization. Core strengths include object detection, multi-object tracking, multi-camera analytics, OCR, image preprocessing, and model evaluation. First author and presenter of an IEEE conference paper at ACDSA 2024.

TECHNICAL SKILLS

Computer Vision: Object detection, multi-object tracking, multi-camera video analytics, pose estimation, PPE detection, zone-based event logic, activity recognition, OCR, image preprocessing

ML & Libraries: Python, PyTorch, OpenCV, Ultralytics YOLO, TensorFlow, ByteTrack, Deep SORT, NumPy

Systems & Evaluation: RTSP, FastAPI, Docker, PostgreSQL, Linux, Git, GPU inference, dataset design and annotation, held-out evaluation, error analysis

EXPERIENCE

Cyclop - *Applied AI Engineer (Computer Vision), Co-founder & Deputy CEO* | Oct 2022 - Jul 2026

- Owned end-to-end engineering of a six-camera crane-operator safety system: built a **1,163-image dataset with 7,499 labeled objects**, trained YOLOv8m, and achieved **0.932 precision, 0.878 recall, 0.920 mAP@0.50, and 0.707 mAP@0.50:0.95** on a held-out test set; the work became a paid client customization
- Implemented active-view selection, ByteTrack identity tracking, pose-based wrist-to-pendant association, helmet checks, temporal voting, and event evidence capture; replaced an IoU-based tracker and fine-tuned the detector after field testing exposed a white helmet failure mode
- Co-developed modular RTSP analytics for PPE, danger zones, tracking/counting, equipment use, and worker activity; offline PPE validation reached **0.906 mAP@0.50 and 0.772 mAP@0.50:0.95** on 579 images with 1,748 labeled objects
- For a multi-camera industrial pilot, manually reviewed **17,696 CCTV frames from eight camera feeds**, curated **1,156 relevant frames**, and designed view-specific zones to reduce long-range and duplicate detections across overlapping views

Shtrih-M - *Computer Vision Engineer Intern* | Feb 2022 - Jun 2022

- Developed and evaluated a Python/OpenCV preprocessing pipeline for camera-assisted recognition of weighted retail products using **1,147 raw GRBG Bayer images** captured under varied lighting, glare, backgrounds, and packaging conditions; combined demosaicing, specular highlight suppression, CLAHE, and adaptive gamma correction
- Documented seven image-processing functions, before/after comparisons, RGB histograms, adaptive decision logic, and implementation details in a **64-page technical report**

Sberbank - *Data Scientist Intern, Research & Innovation* | Sep 2021 - Nov 2021

- Improved and evaluated loan delinquency prediction models using ROC-AUC; achieved **0.89**

RESEARCH & PUBLICATIONS

NeuroQuest - *System Developer, First Author & Oral Presenter* | 2023 - 2024

- Designed and built an end-to-end RTSP-to-comic system combining person detection, multi-object tracking, face and action recognition, structured scene interpretation, GPT-4 story generation, SDXL image generation, and programmatic PDF assembly; led the paper's writing and presented the work at ACDSA 2024 ([IEEE Xplore 10467698](#))

First author: "Automatic Generation of Neurocomics Based on Computer Vision System Data," IEEE ACDSA 2024 ([DOI](#))

Single author: "Automatic Zone Detection in Images Using Polygonal Templates," Vestnik Nauki, 2023 ([DOI](#))

EDUCATION

Bauman Moscow State Technical University | Sep 2022 - Jul 2024

M.S., Information Systems and Technologies, with honors

Bauman Moscow State Technical University | Sep 2018 - Jul 2022

B.S., Information Systems and Technologies, with honors

LANGUAGES

Russian - native; **English** - professional working proficiency