Rakhmatov Shohruh

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Work Experience

DeltaX *Seoul, South Korea*

Senior AI/ML Engineer *Apr 2021 - Present*

- Designing and deploying end-to-end perception pipelines for autonomous vehicles, leading a team of researchers and engineers.
- Utilizing advanced deep learning models to enable real-time **object detection**, **segmentation**, and **tracking** using multiple cameras, resulting in significantly improved accuracy and efficiency.
- Implementation of an Occupation Monitoring System for **Edison Motors'** Autonomous Vehicles.
- Design and Implementation of an Advanced Smart Cabin Monitoring System: ***Drowsiness, Distraction, Head Pose Estimation, Left-item Detection, Seat-belt detection, occupancy detection, Age, Gender, Emotion, Gesture Recognition***.
- Developed a Lightweight Face Detection and Landmark Extraction Module Utilizing Deep Learning Techniques for Detecting Deep Fakes.
- Designed and Developed Advanced Multi-camera-based Surveillance System in CCTV Environment Using AI Technologies: ***Detection, Tracking, Re-identification, Action Recognition***.

Hyundai MIB International *Seoul, South Korea*

AI/ML Research Engineer *Nov 2019 - Mar 2021*

- Designed and deployed a high-performance machine learning-based counterfeit detection model, showcasing superior accuracy and performance. Deployed successfully in finance and retail industries.
- Significantly boosted the model's accuracy to **22%** and Boosting **Inference Speed by 2x**, Resulting in a Highly Currency Recognition Model.
- Designed and Implemented a Robust Real-Time **Age, Gender, and Race Detection** Model for the Smart Mirror Project.
- Designed and Engineered a High-Performance Steel Surface Defect Detection Model.
- Developed an Advanced Facial Authentication System for Secure Payment Transactions.

Computer Vision and Pattern Recognition LAB *KIT, South Korea*

AI/ML Researcher *Sep 2017 - Aug 2019*

- Design and Implementation of a High-Performance Vision Inspection System using Advanced AI Techniques for Error Detection in an Automated Car Painting System, resulting in Improved Quality Control and Operational Efficiency.
- Developed advanced Fabric Defect Detection model using automated pixel-level abnormality detection, resulting in improved accuracy and speed of fabric defect identification.
- Implemented advanced brand logo detection and sponsorship monitoring capabilities in soccer videos, Significantly improved accuracy by 19%, and speed of logo detection increased 2 times (64 fps), surpassing industry benchmarks.
- Designed and deployed a highly accurate Facial Wrinkle Detection Model using semantic segmentation, utilizing state-of-the-art computer vision and deep learning techniques, and achieved 96.7% accuracy.

Education

Kumoh National Institute of Technology *South Korea*

MSc in Computer Science and Engineering *Sept 2017 - Aug 2019*

GPA: 4.25/4.5

Patents and Awards

2022	**Patent**, System for monitoring passengers within the cabin of passenger transport vehicles.	*South Korea*
2022	**Paper (JANT)**, Highlighting Defect Pixels for Tire Band Texture Defect Classification	*South Korea*
2021	**Patent**, Method of a self-driving golf cart and self-driving golf cart.	*South Korea*
2021	**Winner**, 1st Place 2021 ICCV Instance Segmentation Challenge. Visual Inductive Priors for Data-Efficient Computer Vision 2021 Instance Segmentation Challenge	*Montreal, BC, Canada.*
2021	**Winner**, Collaborated in Self-Driving Data Contest 2021 Grand Prize, Won Korea Transportation Safety Authority Chairman Award.	*South Korea*
2021	**Paper (ICCV)**, Task-Specific Copy-Paste Data Augmentation Method, for Instance, Segmentation, Visual Inductive Data-Efficient Deep Learning Workshop at ICCV	.

Skills

Areas of Expertise	**ML/Deep Learning**: PyTroch, Tensorflow, ONNX, TensorRT, Scikit, NumPy, Pandas, etc. **Computer Vision:** 2D/3D Vision, OpenCV, Motion Analysing and Tracking, Digital Image Processing, Detection, Recognition, Segmentation, Transformation, Optimization techniques, Performance evaluation, etc. **ChatGPT & GitHub Copilot**
Programming	Python (OpenCV, Numpy, Dlib, Scikit-learn, Pandas, PIL, Scikit-image, Matplotlib, etc.).
Soft Skills	Adaptive to New Technology, Project/Time Management, Teamwork, Problem-solving, Technical Writing.
Language	English (Fluent), Uzbek (Native), Russian (Intermediate), Korean (Basic)