Usman Asim

Computer Vision Engineer | Edge AI, NPU Deployment & MLOps

Seoul, Republic of Korea | asimsaikhu@gmail.com | +82-10-3406-1900
linkedin.com/in/usmanasimsaikhu | github.com/saikhu | saikhu.github.io

Summary

Computer vision and edge AI engineer with 4+ years building, optimizing, and deploying deep learning systems on embedded NPUs and cloud platforms. Delivered driver monitoring, occupant monitoring, road perception, surveillance, and medical imaging models across TI TDA4VM, Hailo-15, Renesas R-Car, Rockchip, Mobilint Aries, and DeepX M1 targets. Led a seven-engineer team and built Docker-based MLOps pipelines, achieving up to 10x FPS improvement over Python laptop baselines for production automotive programs with Hyundai, Kia, and LG Display. Published researcher with six papers across IEEE Access, Springer, and international conferences.

Skills

Languages: Python, C++, Julia, C#
ML / Deep Learning: PyTorch, TensorFlow, OpenCV, Caffe2
Tools & DevOps: Git, Docker, Kubernetes, Kubeflow, MATLAB, Jira, Confluence, Yocto, OpenVX, CI/CD
Hardware & Edge Devices: TI TDA4VM, Hailo-15, Renesas V3H, Renesas V4H, Rockchip RK3588, Mobilint Aries, DeepX M1, NVIDIA Jetson, NVIDIA DGX, Raspberry Pi, Arduino
Cloud: GCP, Azure
Databases: MySQL, SQL
Miscellaneous: Linux, Embedded Linux, Yocto Project, Edge AI, NPU Deployment, Model Optimization, Sensor Fusion, Driver Monitoring Systems, Occupant Monitoring Systems, FreeSurfer, BET, FSL, SPM12, Microsoft Windows, Microsoft Office, Visual Studio, PyCharm, Colab

Experience

AI Consultant (Remote) ***Evismart, Vancouver, Canada*** **Oct 2024 - March 2026**

- Advised on computer vision product development for dental scan segmentation, covering model design, optimization, and deployment strategy.
- Translated dental imaging requirements into practical model-development and production-readiness guidance for the product team.

AI Research Engineer ***ConTiLab, Seoul, Korea*** **Jun 2025 - Feb 2026**

- Deployed iSafeGuard YOLOv8 worker-safety models on Mobilint Aries and DeepX M1 NPUs and evaluated performance across embedded targets.
- Built a remote AI model management and monitoring system for camera-based worker-safety devices running on embedded AI NPUs.

Team Leader & AI Deployment Engineer & AI Researcher ***DELTAX, Seoul, Korea*** **Sep 2022 - Jun 2025**

- Led seven engineers across model optimization, deployment, and integration for automotive AI programs delivered to Hyundai, Kia, and LG Display.
- Deployed multi-model inference pipelines on TI TDA4VM, Hailo-15, Renesas R-Car, and Rockchip edge AI platforms, achieving up to 10x FPS improvement over Python laptop baselines.
- Customized Yocto-based embedded Linux SDKs and built OpenVX vision applications for fisheye IR driver and occupant monitoring cameras.
- Developed embedded C/C++ and sensor-fusion components that combined camera data with additional in-vehicle sensor inputs.
- Automated Docker-based CI/CD pipelines for model deployment, improving release consistency across edge AI projects.
- Delivered computer vision models for classification, object detection, facial landmarks, segmentation, drowsiness detection, gaze tracking, road perception, road crack detection, and surveillance.

AI Research Engineer ***UNOMIC Inc., Busan, Korea*** **Mar 2022 - Sep 2022**

- Developed and deployed a cloud-native, containerized 3D CNN application for Alzheimer's disease classification from 3D brain MRI.
- Supported Korea MFDS medical-device registration submission under Personal Information Protection Act (PIPA) requirements.

Researcher ***AI Vision Lab, CAU, Seoul, S. Korea*** **Mar 2020 - Feb 2022**

- Published a first-author IEEE Access paper on active contour and dilated convolution methods for inhomogeneous image segmentation.
- Contributed to an NRF-funded brain stroke image generation and segmentation project using GAN networks.
- Supported data labeling and modeling for a National Information Society Agency maritime object detection dataset.

Research Assistant (Intern) ***ARFA Software Technology Park, Lahore, Pakistan*** **Aug 2019 - Jan 2020**

- Built U-Net based 2D brain MRI segmentation experiments and ran transfer-learning comparisons across CNN baselines.
- Collected and labeled offline signature recognition data for downstream verification experiments.

Education

Bachelor of Science in Computer Science ***COMSATS University Islamabad, Punjab, Pakistan*** **Sep, 2015 - Aug, 2019**

- **GPA:** 3.14/4.0
- Final-year project: Automated Classification Toolkit for the Medical Image Researchers (MATLAB) 2019.
- Relevant coursework: Object Oriented Programming, Data Structure, Database Systems, Computer Communications and Networks, Intro. to Machine Learning, Web Engineering, Digital Image Processing, Artificial Intelligence, Network Security, Software Engineering

Master of Science in Computer Science and Engineering ***Chung-Ang University, Seoul, Rep. of Korea*** **Mar, 2020 - Feb, 2022**

- **GPA:** 3.45/4.5
- Thesis: Active Contour Model for Image Segmentation with Dilated Convolution Filter.
- Relevant coursework: Advanced Big Data, Advanced Image Processing, Machine Learning / Deep Learning, Advanced computer algorithms, Advanced Artificial Intelligence, Advanced Computer Graphics, Advanced Computer Networks

Publications

- Farhat Abbas, Mussarat Yasmin, Muhammad Fayyaz, Usman Asim. "ViT-PGC: Vision Transformer for Pedestrian Gender Classification on Small-Size Dataset". Pattern Analysis and Applications, vol. 26, no. 4, pp. 1805–1819, 2023.
- Gi Soon Cha, Usman Asim, Myung Keun Song, Asim Niaz, Kwang Nam Choi. "Image Generation Network Model Based on Principal Component Analysis". 2022 Asia Conference on Advanced Robotics, Automation, and Control Engineering (ARACE), pp. 76–80, 2022.
- Aalfin Emmamuel, Usman Asim, Heungsik Yu, Sungun Kim. "3D-CNN Method Over Shifted Patch Tokenization for MRI-Based Diagnosis of Alzheimer's Disease Using Segmented Hippocampus". Journal of Multimedia Information System, vol. 9, no. 4, pp. 245–252, 2022.
- Usman Asim, Ehtesham Iqbal, Aditi Joshi, Farhan Akram, Kwang Nam Choi. "Active Contour Model for Image Segmentation with Dilated Convolution Filter". IEEE Access, vol. 9, pp. 168703–168714, 2021.
- Aditi Joshi, Mohammed Saquib Khan, Usman Asim, Asad Munir, Hyun Chul Song, Kwang Nam Choi. "Saliency-Based Active Contour Model for Image Segmentation and Region Detection". 2021 International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS), pp. 1–2, 2021.
- Ehtesham Iqbal, Asim Niaz, Asif Aziz Memon, Usman Asim, Kwang Nam Choi. "Saliency-Driven Active Contour Model for Image Segmentation". IEEE Access, vol. 8, pp. 208978–208991, 2020.

Certifications & Awards

- Specialization, TensorFlow Advanced Techniques, Coursera, 2021
- Specialization, Machine Learning Engineering for Production (MLOps), Coursera, 2021
- Convolutional Neural Networks, Coursera, Oct 2021
- IELTS (International English Language Testing System), Band 7, Oct 2023
- The Chung-Ang University Young Scientist Scholarship (CAYSS), Oct 2021
- Winner of Speed Programming, Air University ISB, Pakistan, Jul 2022

Languages

English (Fluent) | Urdu (Native) | Punjabi (Native) | Korean (Beginner)