Usman **Asim**

COMPUTER VISION ENGINEER · MLOPS ENGINEER

390-14, Hapjeong-dong, Mapo-gu, Seoul, Rep. of KOREA

(+82) 10-3406-1900 | asimsaikhu@gmail.com | saikhu.github.io | saikhu | usmanasimsaikhu

"Be the change that you want to see in the world."

Summary

A result-oriented AI Research and Development Engineer with more than 4 years of expertise in Computer Vision, Machine Learning, Deep Learning, and Automation/MLOps. While I am undoubtedly a self-proclaimed super nerd who takes great pleasure in customizing development environments using Vim, Linux, Docker, and Kubernetes, my true passion lies in devising improved problem-solving methods for complex tasks. I am always eager to expand my knowledge by embracing new technologies and tools as the need arises.

Technical Skills

Proficient	Python, C++, MATLAB, Digital Image Processing, Artificial Intelligence (AI), Machine Learning, Artificial Neural Networks (ANNs), OpenCV, PyTorch, TensorFlow, Docker, Kubernetes, Kubeflow, Jira, Confluence, Git, NVIDIA Jetson
Familier	NLP, MLOps, GoogleCloud, Julia, R, Java, C#, Raspberry Pi, Arduino, Wordpress, SQL, MySQL
Other	Linux, Server, DGX, Microsoft Windows, Microsoft Office, Visual Studio, PyCharm, Colab, FreeSurfer, BET, FSL, SPM12.

Professional Experience

DeltaX.ai. — *Seoul, S.Korea*

TEAM LEAD / AI RESEARCHER - COMPUTER VISION — *Sep. 2022 - Present*

- **Team Leader:** I oversee a dynamic team of approximately seven members, specializing in the deployment of models on small and edge devices. My primary responsibilities include task allocation and ensuring the timely completion of projects.
- **Hyundai - Open Innovation Lounge:** AI/CNN Model optimization (quantization and data calibration) and deployment on Edge Devices (Texas Instruments Evaluation Board - Jacinto™ 7).
- **KIA - Edge Computing:** Designed and implemented a comprehensive pipeline utilizing Renesas SDK, Docker, and GitLab to automate the compilation of application source code, model conversion, and Protobuf exporting, enhancing efficiency and productivity for the Renesas Evaluation Board V3H, and V4H.
- **CI/CD Pipeline:** Played a key role in automating applications using Docker, streamlining processes and contributing to MLOps-related initiatives for efficient and scalable deployment of machine learning models.
- **LG Display - Smart Roof Display:** Developed a smart roof transparent display, featuring remote hand-gesture control and integration with a driver monitoring system.
- **Hyundai Mobis - Cabin Monitoring System (CMS):** Led a high-profile project focused on gaze tracking, effectively improving driver attention analysis and optimizing performance in the cabin monitoring system, resulting in enhanced safety measures.
- **Hyundai Mobis - Driver Monitoring System (DMS):** Developed advanced drowsiness detection algorithms utilizing face detection and landmarks for the robustness of the driver monitoring system within the cabin monitoring environment.

UNOMIC Co., Ltd — *Busan, S.Korea*

ASSOCIATE RESEARCH ENGINEER — *Mar. 2022 - Sep. 2022*

- **CI/CD Pipeline:** Designed and implemented a comprehensive pipeline that covered the entire process of model training and deployment, utilizing Docker and Kubernetes with a focus on ensuring high availability, fault tolerance, and auto-scaling capabilities.
- **Cloud Native Alzheimer's Disease Detection App:** Developed and deployed a cloud-native, containerized application specifically designed for the accurate classification of Alzheimer's Disease. Utilized the application using a state-of-the-art 3D CNN model trained on 3D Brain Magnetic Resonance Images, delivering reliable and precise results.

AI Vision Lab, CAU — *Seoul, S.Korea*

RESEARCH ASSISTANT — *May. 2020 - Feb. 2022*

- **Image Segmentation (conventional method):** Created a novel model incorporating active contour and dilated convolution techniques for the accurate segmentation of inhomogeneous images with different modalities.
- **NRF - Brain Strock Image Generation :** Played a significant role in a research project funded by the National Research Foundation (NRF) in Korea, focused on brain stroke image generation and segmentation using GAN networks.
- **NIA - Maritime Object Detection :** Contributed to data labelling and modelling efforts for the Maritime Dataset project, conducted by the National Information Society Agency, facilitating improved insights and analysis within the maritime domain.

ARFA Software Technology Park

Lahore, Pakistan

Computer Vision Research - Intern *Aug. 2019 - Jan. 2020*

- **Offline Signature Verification:** Actively contributed to the collection and labelling of the "Offline Signature Recognition Dataset," ensuring its completeness and accuracy.
- **CNN Segmentation Experiments:** Trained diverse deep neural networks on custom datasets for experimental purposes, enabling comprehensive performance evaluations and conducting transfer learning to facilitate comparative analyses. Additionally, I developed a U-Net-based segmentation model for 2D brain MRI scans, providing accurate classification of benign brain tumours.

Education

Chung-Ang University

Seoul, S.Korea

Master's in Computer Science *Mar. 2020 - Feb. 2022*

- **Major Courses:** Major Courses: Advanced Algorithms, Machine Learning/Deep Learning, Advanced Artificial Intelligence, Advanced Computer Graphics, Advanced Image Processing, Big Data
- **Major Courses Thesis/Dissertation:** Active Contour Model for Image Segmentation with Dilated Convolution Filter

COMSATS University

Islamabad, Pakistan

B.S. in Computer Science and Engineering *Sep. 2015 - Aug. 2019*

- **Best AI FYP Winner:** Title: Automatic Image Classification Toolkit for Researchers of Computer Vision
- **Projects:**
  - **Exam Hall Cheating Detecting using Deep Neural Networks:** In this project, we collected a video dataset of students taking exams in the examination hall, and manually identified and labelled the students cheating during exams. Using this dataset, we trained an object detector (Faster-RCNN) for detecting cheating students.
  - **Agricultural Field Disease Identification Robot:** In this project we programmed a robot using Aurdino, it travels inside the farms and detects the crop diseases, for detection purpose, we train the VillagePant Dataset and run the prediction module on the Raspberry Pi.

Honors, Awards & Expo's

Awards

2019	**Winner,** The Chung-Ang University Young Scientist Scholarship (CAYSS)	*Seoul, S.Korea*
2019	**Gold Prize,** Winner of Speed Programming at Air University	*ISB, Pakistan*

Certificates

Oct. 2021	**Course,** Convolutional Neural Networks	*Coursera*
Jul. 2022	**Specialization,** TensorFlow: Advanced Techniques	*Coursera*
Jul. 2022	**Specialization,** Machine Learning Engineering for Production (MLOps)	*Coursera*
Oct. 2023	**Certificate,** IELTS - The International English Language Testing System (Band # 7)	*Seoul, S. Korea*

Expo's

2023	**AI Expo KOREA,** Presented DeltaX (Bronze sponsor) Cabin Monitoring Solutions	*Seoul, S.Korea*
2023	**Hyundai Open Innovation Lounge,** Presented DeltaX (PoC) Driver Monitoring Solutions	*Seoul, S.Korea*

Publications

References

1. Emmamuel, A., **Asim, U.**, Yu, H. and Kim, S., 2022. "3D-CNN Method over Shifted Patch Tokenization for MRI-Based Diagnosis of Alzheimer's Disease Using Segmented Hippocampus". Journal of Multimedia Information System, 9(4), pp.245-252.
2. G. Soon, **U. Asim**, M. Keun and K. N. Choi "Image Generation Network Model based on Principal Component Analysis" accepted in Asia Conference on Advanced Artificial Intelligence, Machine Learning and Man-machine Interaction (2022)
3. **U. Asim**, E. Iqbal, A. Joshi, F. Akram and K. N. Choi, "Active contour model for image segmentation with dilated convolution filter," in IEEE Access, doi: 10.1109/ACCESS.2021.3137052
4. Joshi, A., Khan, M, S., **Asim, U.**, Munir, A., Song, H, C., and Choi, K. N. (2021) "Saliency- based Active Contour Model for Image Segmentation and Region Detection", 2021 International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS)
5. E. Iqbal, A. Niaz, A. A. Memon, **U. Asim** and K. N. Choi, "Saliency-Driven Active Contour Model for Image Segmentation," in IEEE Access, vol. 8, pp. 208978-208991, 2020, doi: 10.1109/ACCESS.2020.3038945.