

VAN-TU VO

Seoul, South Korea

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GitHub ([link](#)); Linkedin ([link](#))

TECHNICAL STRENGTHS

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|---------------------------|--|
| Computer Languages | Matlab, Python, PySpark, SQL, Bash/C Shell (Vim & Linux Os) |
| Libraries/Tool | Pandas, Numpy, Scikit-Learn, Keras, Tensorflow, Pytorch, Docker Visual Studio Code |
| Research Focus | Machine Learning/Deep Learning applied on Computer Vision, Image Processing, Natural Language Processing. |

EDUCATION

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| Pukyong National University, South Korea MS in Computer Engineering | <i>February 2019</i> |
| Hanoi University of Science and Technology, Vietnam Bachelor in Electrical & Electronic Engineering (Advanced Program) | <i>July 2016</i> |

ACHIEVEMENTS

- Top-five team ranking of **MOAI 2020 Body Morphometry Segmentation Challenge** ([link](#))
- Top-nine team ranking of **NTIRE 2021 Defocus Deblurring Challenge** ([link](#))
- Top-five *PSNR* ranking of **NTIRE 2022 High Dynamic Range Challenge** ([link](#))

EXPERIENCE

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| Research Engineer <i>InhandPlus Inc.</i> | <i>March 2020 - January 2022</i> <i>Korea</i> |
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- **Medication taking behavior analysis:**
 - Successfully released the software to monitor the medication usage behavior of the patients. This software is a combination of deep learning object detection models trained on real video data collected from hospitals and volunteers to detect objects in videos and LSTM models to analyze the action by considering videos as time-series data. The object detection models are built upon **Tensorflow Object Detection API** while action recognition models are built from scratch and updated daily using **Kubeflow on Azure**. The accuracy was more than 95% and the model was brought to cooperate with several hospitals in Korea.
- **Sound detection on Microchips:**
 - Successfully develop a sound detection model and deploy it on a Microchips that is integrated in InhandPlus smartwatch. The model is designed to be small yet efficient to work as a trigger to turn on the camera when the patient open the medication bag. The model reached more than 97% accuracy in the real test.
- **AutoLabelling:**
 - Successfully released an Autolabeller tool based on the original LabelImg by adding the Autolabel function to it using the trained object detection models. This function helps reducing the human resources as well as labelling time by 3 times by empowering the object detection model.

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| Research Engineer <i>Tricubics Inc.</i> | <i>February 2019 - March 2020</i> <i>Korea</i> |
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- **Object Detection for Smart Store:**
 - Successfully released an object detection algorithm to detect different objects inside a store. The object detection was built upon YOLOv3 for fast inference and the detection results are integrated with weight sensors to return as final detection output. The accuracy of the algorithm was about 90% and the system was installed inside the Emart Headquarter.

- **AutoDataGeneration:**

- Successfully developed a DataGenerator to support the object detection training. The DataGenerator extracts objects as foreground using a segmentation algorithm and the put objects on different random background. The DataGenerator help generating million bounding boxes for training the object detection model.

Research Assistant

Department of Computer Engineering

September 2016 - February 2019

South Korea

- **HDR10 Tonemapping - A Project with Samsung Electronic, South Korea (Commercial Project):**

- The project aims to develop an optimized human visual system (HVS) response model-based tone-mapping algorithm to preserve the perceptual responses between the High Dynamic Range (HDR) image and its tone-mapped image. The algorithm was deployed on Samsung's commercial Television.

- Typical **publication:**

- + Human Visual System Model-Based Optimized Tone Mapping of High Dynamic Range Images - **IEEE Access** ([link](#))

- **High Dynamic Range Video Synthesis (Research Project):**

- This project aims to develop Super-pixel based motion estimation framework to estimate the motion vectors between adjacent frames under different illumination condition. The motion vectors are then used to warp the initial frames and synthesize to generate the HDR video).

- Typical **publication:**

- + High Dynamic Range Video Synthesis Using Superpixel-Based Illuminance-Invariant Motion Estimation - **IEEE Access** ([link](#))

PERSONAL PROJECTS

Product Recommendation (Commercial Project):

- Successfully released the back-end system for Harex Infotech's *AI Recommendation* using Mysql, Nginx, Word2Vec, Docker Compose, and Django. The AI Recommendation is running smoothly and helps increasing the purchase traffic by 3% per day.

Document Splitting:

- Develop algorithm to split pdf files from a merged file. The algorithm consists of an image recognition branch and a Natural Language branch to handle both spatial and language information.

- Github link: [document_splitting](#)

Zero-DCE TF:

- A Tensorflow implementation of Zero-DCE, a deep learning based image enhancement algorithm without input-ground truth pairs.

- Github link: [Zero_DCE_TF](#)

Attention! Stay Focus!:

- A deep learning model to solve the Defocus Deblurring Problem. The deep learning model is modified from the original Unet with the Attention Mechanism. This project was published on CVPRWorkshop 2021.

- Typical **publication:** Attention! Stay Focus! - **CVPR Workshop 2021** ([link](#))

- Github link: [ATTSF](#)

ML in production:

- This project aims to collect and reproduce various ways to deploy a Machine Learning model in production as a tutorial. This tutorial shows how to use RestAPI, Docker, TFserving, and Kubernetes to run the model.

- Github link: [ml_in_production](#)