Minh. **On Vu Ngoc**

COMPUTER VISION · BIOMEDICAL · REMOTE SENSING · MACHINE LEARNING

(+33) 6 98 94 71 62 | vungocminhpn@gmail.com | onvungocminh | vungocminh-on | vungocminhpn

Experiences

PostDoc in Computer Vision and Machine Learning
April. 2020 - Present (2.5 years)

LRDE Laboratory, EPITA — *Paris, France*

- Working in different Computer Vision applications: **Medical, Biomedical, Remote Sensing, Biology Imaging, Deep Learning, Topological Data Analysis.**
- Segmenting 3D plant tissue images (**NeurIPS** workshop) (**Improvement: 40%**)
- Proposing new topological loss functions for regulating the neural network behaviors (**Improvement: 20%**).
- Segmenting Multi-classes (organs) from medical images using Transformer (CT scans, MRIs, multi-modality image) (**Improvement: 4%**).
- Detecting and Preserving the Road Topology from satellite images (**Improvement: 9%**).
- Implementing **contrast convolution architecture** for generalization (dataset shift) (**Improvement: 15%**).
- Improving interactive segmentation for 2D/3D **noisy images** (**Pattern Recognition** journal).

Machine learning & Computer Vision PhD Candidate
Oct. 2016 - April. 2020 (3.5 years)

Sorbonne University — *Paris, France*

- Identity document detection in videos (**Accuracy: 97%**).
- Hierarchical image representation for several applications (**Object detection, multimodal/spectral segmentation, shortest path finding**).

Internship in Computer Vision
March. 2016 - Oct. 2016 (6 months)

Cap 2020 — *Bordeaux, France*

- *Project*: Counting the number of slugs in the video captured by infrared cameras using the machine learning methods. (**Accuracy: 80%**)

Internship in Signal Processing
March. 2015 - Sep. 2015 (6 months)

Telecom Bretagne, Lab-STICC — *Brest, France*

- *Project*: High spectral efficiency modulation and signal shaping.

Internship in Computer Vision
May. 2014 - Sep. 2014 (4 months)

Rpc.vn — *HCMC, Vietnam*

- Project: License plate detection and recognition.

Education

PhD in Computer Vision and Machine Learning
Oct. 2016 - April. 2020 (3.5 years)

Sorbonne University — *Paris, France*

- *Thesis*: A new distance for multivariate images with applications to salient object detection and segmentation
- *Project*: Document detection in videos captured by smartphones using a saliency-based method.

MSc in SISEA (Signal, Image, Embedded Systems, Automation)
Oct. 2015 - Oct. 2016 (1 year)

Telecom Bretagne — *Brest, France*

- Specialized in Computer Vision

Bachelor of Engineering
2010 - 2015 (5 years)

Vietnamese-French Training Program Of Excellent Engineers (P.F.I.E.V), Ho Chi Minh University Of Technology — *HCMC, Vietnam*

- *Major*: Telecommunication, Software engineering

Skills

Programming Languages
- Python, C/C++, Cuda, JavaScript, Matlab, R.

Frameworks and Tools
- **Deep learning frameworks**: Pytorch, Tensorflow, Keras, Theano.
- **Deep learning Tools**: Tensorboard, Optuna.
- **Libraries**: OpenCV, Scikit-learn, Pandas, Numpy, Eigen, Qt.
- **Deployment Tools**: Git, Docker, Kubernetes.
- **Web & Database**: SQL, JavaScript, HTML5, Google colab, Kaggle.

Languages
- **English**: Professional working proficiency.
- **French**: Professional working proficiency.
- **Vietnamese**: Native.

Project Management
Jira, Trello, Slack.

Research
- Read and write academic papers
- Writing technical blogs on Medium
- Mathematical thinking

Publications

Advances in Neural Information Processing Systems — *New Orleans, USA*

Workshop — *December. 2022*

- **Minh O.V.N.**, Nicolas B., Jonathan F., Proposal of end-to-end structure-aware 3D segmentation of plant tissues.

Pattern Recognition — *Elsevier*

Journal — *Nov. 2022*

- **Minh O.V.N.**, Edwin C., Jonathan F., Thierry G., The Dahu graph-cut for interactive segmentation on 2D/3D images.

The British Machine Vision Conference — *Manchester, England*

Conference — *Nov. 2021*

- **Minh O.V.N.***, Yizi C.*, Nicolas B., Joseph C., Edwin C., Jonathan F., Clément M., Thierry G., Introducing the Boundary-Aware Loss for Deep Image Segmentation.

Computer Vision and Image Understanding — *Elsevier*

Journal — *May. 2020*

- **Minh O.V.N.**, Nicolas B., Jonathan F., Thierry G., A minimum barrier distance for multivariate images with applications.

International Conference on Document Analysis and Recognition — *Sydney, Australia*

Workshop — *Sep. 2019*

- **Minh O.V.N.**, Jonathan F., Thierry G., Document detection in videos captured by smartphones using a saliency-based method.

Document Analysis Systems — *Vienna, Austria*

Conference — *April. 2018*

- **Minh O.V.N.**, Jonathan F., Thierry G., Saliency-based Detection Of Identity Documents Captured By Smartphones.

International Conference on Analog VLSI Circuits — *HCMC, Vietnam*

Conference — *Nov. 2014*

- Thuong L.T, Oanh T.T.H, Nga L.T, Giap L.Q, **Minh O.V.N.**, Duy N.B., Particle Filter Design in a case of System Assumption implemented on Matlab and XILINX VIRTEX-II-Pro based FPGA Hardware.

Publications (Submitted)

Computer Vision and Image Understanding (Submitted) — *Elsevier*

Journal — *Dec. 2022*

- **Minh O.V.N.**, Nicolas B., Jonathan F., Efficient Topology-Preserving Road Segmentation from Remote Sensing Imagery.

International Journal of Geographical Information Science (Submitted) — *Taylor & Francis*

Journal — *Nov. 2022*

- Yizi C., **Minh O.V.N.**, Joseph C., Edwin C., Julien P., Clement M., Historical Map Segmentation.

Computer Vision and Pattern Recognition Conference (Submitted) — *Vancouver, Canada*

Conference — *Nov. 2022*

- Yizi C., **Minh O.V.N.**, Zhao Z., Clement M., Thierry G., Rethinking the Pixel Connectivity in Topology-aware Image Segmentation.

Computer Vision and Pattern Recognition Conference (Submitted) — *Vancouver, Canada*

Conference — *Nov. 2022*

- **Minh O.V.N.**, Nicolas B., Jonathan F., Filling in the gaps in broken boundaries thanks to directional forces for topology-preserving image segmentation.

IEEE Transactions on Image Processing (Submitted) — *IEEE*

Journal — *May. 2022*

- **Minh O.V.N.***, Yizi C.*, Nicolas B., Jonathan F., Clement M., BuyTheDips: PathLoss for improved topology-preserving deep learning-based image segmentation.

International Conference on Document Analysis and Recognition (Preparing) — *USA*

Conference — *Dec. 2022*

- **Minh O.V.N.***, Yizi C.*, Joseph C., Julien P., Clement M., Combining Transformer with Topological loss for historical map segmentation.

International Geoscience and Remote Sensing Symposium (Preparing) — *USA*

Conference — *Dec. 2022*

- Huy N.T., **Minh O.V.N.**, Flooded Road Segmentation using Deep Learning Methods.

Medical Imaging with Deep Learning (Preparing) — *USA*

Conference — *Dec. 2022*

- **Minh O.V.N.**, Nicolas B., Jonathan F., Introducing the Boundary-Directional Loss for multi-classes medical image segmentation.