Thien NGUYEN

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I am an AI Research Engineer at CEA-LETI, where I build hardware-aware machine-learning solutions for computer vision and embedded systems. My current work investigates multimodal vision–language models powered by large language models, evaluating their integration with diverse visual encoders. I earned my PhD in Machine Learning and Signal Processing from the University of Grenoble Alpes and CEA-LETI in 2019. My overarching goal is to bridge theory and practice by designing explainable AI paradigms that enable efficient, real-world deployment on resource-constrained hardware.

Education

PhD	**University of Grenoble-Alpes**, Machine Learning and Computer Vision	Nov 2019 – Nov 2022
MSc.	**INSA Centre Val de Loire, Blois**, Automative Systems and Signal Processing	Sept 2015 – Aug 2019
Prepa	**University of Hue, Vietnam**, Engineering Student in Preparatory Class	Sept 2013 – Aug 2015

Experience

CEA-LETI, AI Research Engineer — Grenoble, France — Dec 2022 – Today

- Developed compact, multi-task neural networks with confidence estimation for a variety of computer vision tasks, optimized for real-time performance under stringent hardware constraints
- Designed a novel neural network-based processing pipeline for novel thermal imaging systems; co-inventor on a submitted patent
- Contributed to 3 peer-reviewed publications at AI conferences (IEEE ISCAS, AICAS)
- Conducted research in efficient deep learning and edge deployment
- Supervised and mentored Master's students on applied AI research projects

CEA-LETI, PhD Candidate in Machine Learning — Grenoble, France — Nov 2019 – Nov 2022
Deep Neural Networks hardware-algorithmic enablers for compact ASIC design towards embedded image/video processing, Supervisors: William Guicquero, Gilles Sicard

- Designed hardware-compliant DNNs using various techniques such as quantization, pruning, weight-sharing and hypernetwork
- Authored and co-authored five peer-reviewed publications (in IEEE TCSVT, TCI, ISCAS, AICAS and SiPS); submitted a patent on advanced DNN compression using hypernetwork and pseudo random generator

CEA-LETI, Research Intern in Image Processing — Grenoble, France — Feb 2019 – Aug 2019
Design of an ISP for Raw Camera-Sensor Images, Supervisor: Laurent Alacoque

- Built a Python development framework complete with thorough documentation, unit tests, and peer code reviews to ensure reliable, maintainable software
- Designed, implemented, and benchmarked advanced image-processing pipelines (*e.g.*, denoising, demosaicing, white-balance...) for raw sensor data

Skills

Tools and Programming: Python, MATLAB, C/C++, R, Markdown, LaTeX
Machine Learning Frameworks: TensorFlow, PyTorch, Scikit-learn, Transformers, vLLM, OpenCV
Data processing frameworks: Numpy, Pandas, Matplotlib
Software frameworks: Gradio, PySimpleGUI, Unittest
AI & NLP: Transformer models, LLMs, VLMs, Fine tuning and knowledge distillation, Data and prompt engineering
Languages: French (fluent), English (fluent), Vietnamese (mother tongue)

Publications

SmartNMC: A 1Mb-200µW-20fps near-imager spatio-temporal inference hardware module — 2025
William Guicquero, Nicolas Pelletier, **Thien NGUYEN**, Jean-Phillipe Noel, Manuel Pezzin, Marjorie Gary, Sylvain Choisnet
IEEE Symposium on Circuits and Systems (ISCAS), London, 2025

End-to-End Fully-Binarized Network Design: From Generic Learned Thermometer to Block Pruning (Oral) — 2025
Thien NGUYEN, William Guicquero
IEEE Conference on Artificial Intelligence Circuits and Systems (AICAS), Bordeaux, 2025

MDGNet: a light-weight, hardware-compliant Convolutional Neural Network for efficient image inference tasks (Oral) — 2023
Thien NGUYEN, William Guicquero
Colloque sur le traitement du signal et des images (GRETSI), Grenoble, 2023

BILLNET: A Binarized Conv3D-LSTM Network with Logic-gated residual architecture for hardware-efficient video inference (Oral) — 2022
Thien NGUYEN, William Guicquero, Gilles Sicard
IEEE Workshop on Signal Processing Systems (SiPS), Rennes, 2025

MOGNET: A Mux-residual quantized Network leveraging Online-Generated weights — 2022
(Oral)
Thien NGUYEN, William Guicquero, Gilles Sicard
IEEE Conference on Artificial Intelligence Circuits and Systems (AICAS), Incheon, 2022

Histogram-Equalized Quantization for logic-gated Residual Neural Networks (Oral) — 2022
Thien NGUYEN, William Guicquero, Gilles Sicard
IEEE Symposium on Circuits and Systems (ISCAS), Austin TX, 2025

Luminance-depth reconstruction from compressed time-of-flight histograms (Journal) — 2022
Valentin Poisson, **Thien NGUYEN**, William Guicquero, Gilles Sicard
IEEE Transactions on Computational Imaging (TCI), 2022

A 1Mb mixed-precision quantized encoder for image classification and patch-based compression (Journal) — 2022
Thien NGUYEN, William Guicquero, Gilles Sicard
IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), 2022

Patents

Full-resolution estimation of temperature-emissivity from multispectral thermal infrared imaging, **Thien NGUYEN**, William Guicquero — 2024

Deep Neural Networks with on-the-fly generated weights from Automatic Number Generators, **Thien NGUYEN**, William Guicquero — 2022

Projects

Image restoration using sparse representation and K-SVD — Sept 2018 - Dec 2018

- Analyzed, implemented and evaluated a unified method for image denoising and inpainting based on sparse coding and K-SVD (inspired by this paper)
- Tools Used: Numpy, Scikit-learn, OpenCV

Image denoising by BM3D — June 2018 - Aug 2018

- Re-implemented and evaluated the classical image denoising method BM3D
- Tools Used: Numpy, Scikit-learn, OpenCV

Student Supervisions

Revisiting Local Binary Patterns for Boosting the Efficiency of Deep Neural Networks — Feb 2025 - Aug 2025
Aymane Lahgazi (Master 2 MATMECA, Bordeaux)

Distinctions

Student Participation Grant, IEEE ISCAS — 2022

References

William Guicquero
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William Guicquero
Google Scholar

Gilles Sicard
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ResearchGate