Van Dat NGUYEN

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Summary

Computer Vision researcher and engineer with a PhD and 8+ years of experience spanning autonomous systems perception, robust ML research, and applied computer vision. At VinAI Research (acquired by Qualcomm AI Research), led development of detection pipelines with ONNX export targeting NVIDIA DRIVE AGX and Ambarella CV25 under real-world latency and hardware constraints. Research expertise in robust perception with first-author publications at CVPR 2024 and ICCV 2025, focusing on generalizable models robust to compression, quality variation, and cross-dataset distribution shift. Best Paper Award, University of Luxembourg (2024).

Core Skills

- **Expertise**: Computer Vision, Object Detection, Spatio-Temporal Modeling, Robust ML, Model Evaluation, Dataset Design & Quality Assurance, Experiment Design
- **ML Frameworks**: PyTorch, TensorFlow, Keras, Scikit-learn, Scikit-image, OpenCV, ONNX, TensorBoard
- **Systems**: CUDA, Git/GitLab, Docker, Linux, HPC, Slurm, DVC, CVAT, REST APIs, NginX, Elasticsearch
- **Programming**: Python, SQL
- **Languages**: Vietnamese (Native), English (Advanced)

Selected Publications

- **Nguyen, D.** et al. Vulnerability-Aware Spatio-Temporal Learning for Generalizable Deepfake Video Detection. *ICCV 2025.* First author.
- **Nguyen, D.** et al. LAA-Net: Localized Artifact Attention Network for Quality-Agnostic and Generalizable Deepfake Detection. *CVPR 2024.* First author. Best Paper Award (University of Luxembourg).
- **Nguyen, D.** et al. LAA-X: Unified Localized Artifact Attention for Quality-Agnostic and Generalizable Face Forgery Detection. *arXiv 2025.* First author.
- **Nguyen, D.** et al. Solving Distribution Problems in Content-Based Recommendation System with Gaussian Mixture Model. *Applied Intelligence 2021.* First author.

Experience

- **University of Luxembourg, CVI2 Lab, SnT** — Kirchberg, Luxembourg
  Doctoral Researcher — *Oct 2022 – Mar 2026*
  - Led research on generalizable visual detection with a focus on robustness to compression, quality variation, and cross-dataset distribution shift in manipulated images and videos.
  - Developed deep learning methods for localized artifact reasoning and spatio-temporal modeling, resulting in first-author publications at CVPR 2024 and ICCV 2025 and outperforming prior state-of-the-art approaches across multiple unseen benchmarks in cross-dataset settings.
  - Built reproducible training and evaluation pipelines in PyTorch for cross-dataset benchmarking and failure analysis; open-sourced codebases on GitHub with 250+ stars from the research community.
  - Mentored master's students on research implementation, experimentation, and model evaluation.
- **VinAI Research (acquired by Qualcomm AI Research)** — Hanoi, Vietnam
  Technical Lead / Product Owner — *Dec 2020 – Aug 2022*
  - Led development of a traffic sign / traffic light detection pipeline for autonomous driving across 300+ fine-grained classes.
  - Designed a novel FPN architecture integrated with a customized CenterNet model, together with a specialized data processing strategy, to address challenging scenarios including day/night conditions, occlusion, tiny/small objects, extreme lighting, class imbalance, and varied distances.
  - Defined data requirements and managed large-scale in-house dataset development, overseeing CVAT-based annotation workflows and ensuring data quality assurance.
  - Improved mAP by 20% on the internal testing set, achieved full recall for traffic signs within 100 meters, and detected signs at ranges up to 250 meters under simulation conditions, enabling sufficient lead time for downstream planning and control decisions.
  - Exported deployment-oriented ONNX models for the traffic sign/light detection pipeline targeting NVIDIA DRIVE AGX and Ambarella CV25, achieving 50 FPS inference on DRIVE AGX.
  - Also led work on 2D human pose estimation and action recognition, including distribution-aware keypoint estimation, violence detection, and zero-shot settings.

- **Vietnam National University, Human Machine Interaction Lab** Hanoi, Vietnam
  Research Assistant (part-time, concurrent with VinAI Research) *Sep 2020 – Aug 2022*
  - Built an EEG-ET-based recommendation algorithm integrated with a brain-computer interface to support communication for users with motion disabilities, achieving real-time inference in BCI settings.
  - Worked on recommendation modeling, natural language modeling, data crawling, and preprocessing while mentoring student collaborators.
- **Sun Asterisk Japan** Tokyo, Japan
  AI Research Engineer *Jan 2020 – Jul 2020*
  - Developed a distribution-aware content-based recommendation system for liquor recommendation, covering data crawling, preprocessing, backend APIs, and experiment workflows.
  - Used DVC and Django to support reproducible model development and service integration.
  - This work led to publications in Applied Intelligence and ICCCI, with the recommendation model outperforming Sakenowa in direct evaluation as reported in Applied Intelligence.
- **Sun Asterisk Vietnam** Hanoi, Vietnam
  Technical Lead *Apr 2019 – Dec 2020*
  - Led applied ML projects spanning end-to-end face recognition, facial matting, wrist detection, and deep learning model optimization.
  - Worked on online learning for ML systems, image retrieval, real-time inference, lightweight segmentation, deployment, and backend integration with Elasticsearch, Django, and NginX.
- **Framgia Inc.** Hanoi, Vietnam
  Full-Stack Web Application Developer *Mar 2017 – Apr 2019*
  - Developed production web applications in agile teams. Gained early experience in software engineering and project delivery.

Education

- **University of Luxembourg** Kirchberg, Luxembourg
  PhD in Computer Science *Oct 2022 – Mar 2026*
  - Research focus: generalizable and robust visual detection under distribution shift and unseen perturbations. Advisor: Prof. Dr. Djamila Aouada.
- **Vietnam National University, University of Engineering and Technology** Hanoi, Vietnam
  MSc in Computer Science *2018 – 2020*
  - Graduated in the top 5% of the class.
- **Military Technical Academy – Le Quy Don Technical University** Hanoi, Vietnam
  BEng in Software Engineering *2012 – 2017*
  - Graduated in the top 10% of the class.

Awards

- Best Paper Award, LAA-Net, Faculty of Science, Technology and Medicine, University of Luxembourg (2024)
- 1st Runner-Up, Sun* Hackathon (2019)
- Best Project of the Year, WSM, Framgia Inc. (2017)
- Hot Trainee of the Year, Framgia Inc. (2016)
- Best Trainee of the Month, Framgia Inc. (2016)
- Gameloft Scholarship for Excellent Students (2016)