Vuong (Dustin) Nguyen

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Summary

A Ph.D. candidate in CS with strong experience in Computer Vision, Machine Learning, and Deep Learning. A strongly collaborative and self-motivated team player/leader. Well-equipped with critical thinking and problem solving skills.

Education

University of Houston — Houston, TX
Ph.D. in Computer Science | GPA: 3.84 — *Aug 2022 – Dec 2025 (Expected)*

Hanoi University of Science and Technology — Hanoi, Vietnam
B.S. in Applied Mathematics | Talent Honors Program — *Sep 2017 – Jul 2021*

Experience

Autodesk — San Francisco, CA
AI Research Scientist Intern — *May 2024 – Aug 2024 (Expected)*

- Develop production-ready multimodal deep generative models using Autoregressive Transformers and Diffusion models for generating 3D and CAD models from neural implicit representations, images, text, and point clouds.
- Technologies: Python, PyTorch (Lightning), Ray, AWS, Comet, HuggingFace, Blender, Fusion 360, OpenCascade.

Quantitative Imaging Lab — Houston, TX
Graduate Research Assistant — *Aug 2022 – Dec 2025 (Expected)*

- Develop state-of-the-art deep learning models for Person Re-Identification (Re-ID).
- Apply GANs, Diffusion and Vision-Language Models in image/text data augmentation/generation for Re-ID.
- Technologies: Python, PyTorch (Lightning), TensorFlow, OpenCV, Slurm, MLflow, Blender.

Grooo International — Hanoi, Vietnam
Machine Learning Engineer — *Feb 2021 – Jul 2022*

- Preprocessed, cleaned, and visualized imbalanced large-scale datasets. Performed EDA and feature engineering.
- Built predictive ML models and developed efficient NLP models for AI-driven mobile applications.
- Technologies: Python, C++, PyTorch, TensorFlow, Docker, ONNX, API.

Selected Publications (Google Scholar)

1. **V. D. Nguyen**, K. Khaldi, D. Nguyen, P. Mantini, and S. K. Shah. "Contrastive Viewpoint-aware Shape Learning for Long-term Person Re-Identification". In *WACV*, 2024. [*Paper*] [*Code*]
2. **V. D. Nguyen**, P. Mantini, and S. K. Shah. "Contrastive Clothing and Pose Generation for Cloth-Changing Person Re-Identification". In *CVPRW*, 2024. [*Paper*]
3. **V. D. Nguyen**, P. Mantini and S. K. Shah. "Attention-based Cross-Modality Learning for Cloth-Changing and Occluded Person Re-Identification". In *ICIP*, 2024. [*Paper*]
4. **V. D. Nguyen**, P. Mantini, and S. K. Shah. "Occlusion-aware Cross-Attention Fusion for Video-based Occluded Cloth-Changing Person Re-Identification". In *IJCB*, 2024 *(Oral)*. [*Paper*]
5. **V. D. Nguyen**, P. Mantini, and S. K. Shah. "Occluded Cloth-Changing Person Re-Identification via Occlusion-aware Appearance and Shape Reasoning". In *AVSS*, 2024 *(Oral)*. [*Paper*]
6. **V. D. Nguyen**, S. Mirza, A. Zakeri, A. Gupta, K. Khaldi, R. Aloui, P. Mantini, S. K. Shah, and F. Merchant. "Tackling Domain Shift in Person Re-Identification: A Survey and Analysis". In *CVPRW*, 2024. [*Paper*]
7. **V. D. Nguyen**, P. Mantini, and S. K. Shah. "Temporal 3D Shape Modeling for Video-based Cloth-Changing Person Re-Identification". In *WACVW*, 2024. [*Paper*] [*Code*].
8. K. Khaldi, **V. D. Nguyen**, P. Mantini, and S. K. Shah. "Unsupervised Person Re-Identification in Aerial Imagery". In *WACVW*, 2024. [*Paper*]

Accepted

1. S. Mirza, A. Gala, P. Devarakota, **V. D. Nguyen**, P. Mantini, and S. K. Shah. "Recall-based Knowledge Distillation for Data Distribution based Catastrophic Forgetting in Semantic Segmentation". In *ICPR*, 2024. [*Paper*]
2. **V. D. Nguyen**, P. Mantini, and S. K. Shah. "Cross-Attention Vision Transformer for Occluded Cloth-Changing Person Re-Identification". In *ACCV*, 2024. [*Paper*]
3. **V. D. Nguyen**, P. Mantini, and S. K. Shah. "Cross-Modality Complementary Learning for Video-based Cloth-Changing Person Re-Identification". In *ACCV*, 2024.[*Paper*]

Projects

B-rep Generation *Jun 2023 - Present*

- Preprocess large-scale CAD datasets, generate various data modalities for model training and evaluations.
- Develop a generative model to generate B-reps from different modalities, comprising Autoregressive Transformers for generating vertex/edge/face token sequences and a Diffusion model to tackle noisy input modalities.

Texture Generation on 3D Mesh *Jun 2023 - Present*

- Annotate Objaverse 3D dataset; Build a CLIP-based model to classify 3D objects based on quality and art style.
- Develop and implement a model to generate 3D mesh from 2D sketch image based on NeRF and EG3D.
- Implement a model based on CLIP and Stable DreamFusion to alter texture on 3D meshes given text prompt.

Person Re-Identification (Re-ID) | *Code* *Aug 2022 - Present*

- Design identity-aware 3D SMPL human reconstruction models to extract 3D shape, pose, and gait for Re-ID.
- Propose novel models based on CNNs, Transformers, GNNs, and attention mechanisms for Re-ID in-the-Wild.
- Construct two large-scale Re-ID datasets using generative models, semantic segmentation, and pose estimation.

AI-Generated Image Detection | *Code* *Jan 2024 - Mar 2024*

- Implemented a patch-based approach to detect deepfake or images generated by GAN or Diffusion models.

Automated IDs and Business Cards Extractor *Feb 2021 - Mar 2022*

- Tested OCR methods; Implemented Multi-lingual BERT model, achieving 90% accuracy in Korean and Japanese.
- Deployed model with TensorFlow using ONNX, FastAPI, and Docker.

Skills

Programming: Python, C++, R, MATLAB, SQL, PHP, HTML

Frameworks: PyTorch (Lightning), TensorFlow, Keras, HuggingFace, OpenCV, Pandas, NumPy, Scikit-Learn, SciPy

MLOps: Github, Docker, AWS, MLflow, Kubernetes, Comet, Ray, Azure ML Studio, API, ONNX, Blender

Reviewer Services

Journals: *IJCV*, *Pattern Recognition*, *IEEE TCSVT*, *Image and Vision Computing*

Conferences: *BMVC 2024*, *ACM Multimedia 2024*, *CVPR Workshops 2024*, *ICME 2024*

Honors and Awards

Outstanding Junior Ph.D. Student Award, awarded by University of Houston, 2024.

Winner (Audience's Choice) & **1st-Runner-up** (Committee's Choice) Prizes at the Ph.D. Research Showcase 2024.

Cullen Graduate Student Success Fellowship, awarded by University of Houston.

FPT Young Talents Scholarship, awarded by FPT Group for outstanding undergraduate researcher.

Leadership

Founder and President of Cougar Vision, partnering with Cougar AI *Mar 2024 - present*

Graduate Student Advisory Board, College of Natural Sciences and Mathematics, UH *Aug 2023 - present*

Secondary Student Officer, Computer Science Graduate Student Association, UH *Aug 2022 - present*

Certificates

Model Parallelism: Building and Deploying Large Neural Networks *NVIDIA*

Microsoft Azure Machine Learning *Microsoft*

Generative AI with Large Language Models *Coursera*

Machine Learning Engineering for Production (MLOps) Specialization *DeepLearning.AI*

References

Hooman Shayani, Sr. Research Manager, Autodesk Email: hooman.shayani@autodesk.com

Shishir Shah, Chair of Department of Computer Science, University of Houston Email: sshah@central.uh.edu