Hung Tran

Linkedin - Google Scholar - Github - Website - Email

PROFESSIONAL PROFILE

- Ph.D. student in Machine Learning, Computer Vision. Est. graduation: Jan 2024.
- Research interest: Human behavior understanding, Video understanding, Knowledge Representation with LLMs.
- First author of papers at ICCV 2023, CVPRW 2022, WACV 2021.
- Industrial experiences in distributed web-based systems. Proficiency in Python and deep learning frameworks.

EDUCATION

Ph.D. in Computer Science – Applied Artificial Intelligence Institute (A2I2), Deakin University, Australia **Jan 2020 – Jan 2024**
Thesis: Analyzing Structures of Human Behavior in Videos.

Bachelor in Information Technology – The University of Danang, Vietnam **May 2014 – May 2019**
Thesis: Light-weight Deep Learning model for Human Segmentation. Top 10%.

RESEARCH EXPERIENCE

Foundational Commonsense Prior for Video Action Prediction – A2I2, Deakin University, Australia **Dec 2022 – Nov 2023**
- Incorporating LLMs to enhance existing vision models, while maintaining a practical inference speed.
- *Outcome*: One planned submission to CVPR 2024.

Persistent – Transient Duality in Human Behavior Modeling – A2I2, Deakin University, Australia **Jan 2021 – Nov 2022**
- Addressed the inflexibility of neural networks in modeling the mode-switching nature of human behavior. Introduced a concept of persistent-transient duality to represent this mode-switching nature.
- Implemented a parent-child network with an egocentric design and a dynamic switching mechanism to model this concept.
- Achieved new SoTA in 3D and 2D motion prediction, and trajectory prediction.
- *Outcome*: Two papers accepted at CVPRW 2022 and ICCV 2023.

Goal-driven Trajectory Prediction – A2I2, Deakin University, Australia **Feb 2020 – Dec 2020**
- Formulated the concept of goal-based modeling and applied it to Trajectory Prediction.
- Designed a dual-stream, hierarchical network to model the pedestrians' goal and forecast future trajectories.
- *Outcome*: One paper accepted at WACV 2021.

Affordable Mini Self-driving vehicle – VNUK, The University of Danang, Vietnam **Apr 2019– Aug 2019**
- Developed an affordable self-driving platform for educational purpose.
- Designed a cost-effective hardware configuration for the self-driving car, inspired by a costly open-source project.
- Implemented the vehicle control interface with lane-line detection and object detection in various lighting conditions.
- *Outcome*: Cut the cost of building a 1/10 scale Nvidia-equipped self-driving car from $4,200 to under $2,000.

INDUSTRIAL EXPERIENCE

Software developer intern – Sioux High Tech Software Ltd. **Sep 2018 – Jan 2019**
- Developed a remote learning system on AWS using Node.js, MongoDB, and React.js.
- Deployed the system on Amazon EC2 instances in 3 regions: Singapore, North America, and China, using Amazon S3 for data storage, Docker for containerization, and Nginx for DNS mapping.
- *Outcome*: A distributed system for real-time online teaching with full unit-testing and back-up functionalities.

SKILLS

Programming Languages: Python - Over 5 years of experience, Other: C/C++, JS, Node.js, MongoDB.
Deep Learning Models: RNNs, CNNs, Transformers (ViT, MviT), Multimodal Networks (CLIP, Open Flamingo), LLMs.
Libraries: PyTorch, Hugging Face, NetworkX, NumPy, Pandas, OpenCV, Matplotlib.
Platform: AWS, Google Cloud, Git, Docker, Slurm, Distributed Computing (NCCL, Ray Framework).

PUBLICATIONS

- **Tran, Hung**, Vuong Le, Svetha Venkatesh, Truyen Tran.*"Persistent-Transient Duality: A Multi-Mechanism Approach for Modeling Human-Object Interaction*." Proceedings of The International Conference on Computer Vision (**ICCV**), 2023.
- **Tran, Hung**, Vuong Le, Svetha Venkatesh, Truyen Tran. "*Persistent-Transient Duality in Human Behavior Modeling*." Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshop (**CVPRW**) 2022.
- **Tran, Hung**, Vuong Le, and Truyen Tran. "*Goal-driven Long-Term Trajectory Prediction*." Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (**WACV**), 2021.

SCHOLARSHIPS AND AWARDS

Deakin University Postgraduate Research Scholarship. **2020 – 2024**
People's choice Award, Three Minute Thesis Competition, A2I2. **2023**
Top 8 nationwide, Digital Race Driverless: Self-driving car competition, FPT Group, Vietnam. **2018**

REFERENCES

- **Dr. Vuong Le,** Amazon Machine Learning Australia - levuong@amazon.com
- **A/Prof. Truyen Tran,** Applied Artificial Intelligence Institute - truyen.tran@deakin.edu.au
- **Prof Svetha Venkatesh,** Applied Artificial Intelligence Institute - svetha.venkatesh@deakin.edu.au