THANH VAN TRONG TRAN

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EDUCATION

Bachelor of Computer Science (Honors), VNU University of Engineering and Technology — Aug 2019 - Jun 2023
GPA: 3.71/4.0 — Ranked 10th/153 (Top 7%) of the Computer Science Department

RESEARCH & WORK EXPERIENCE

AI Research Resident — Aug 2023 - Present
FPT Software — *largest IT services company in Southeast Asia* — *Hanoi, Vietnam*

- Constructed a novel, synthetic doctor-patient dialogue dataset and developed speech-augmented language models for medical note generation.
- Investigated speech AI and multimodal learning for diverse applications, including multisensory emotion recognition, vision-guided speech and audio synthesis, text-to-speech, and LLM-agent development. Published in ICASSP 2025 and Interspeech 2025.
- Developed methods to improve protein characteristics at the sequence level. My research investigated black-box optimization in discrete and latent spaces to effectively guide the optimization trajectory of protein sequences. Published in two Q1 journals (IF 12 and 4.6) and KDD 2025.
- Advisors: **Prof. Truong-Son Hy** and **Dr. Van Nguyen**.

Student Researcher — Sep 2022 - May 2023
Institute for Artificial Intelligence — *VNU University of Engineering and Technology, Hanoi*

- Engineered and open-sourced an error analysis toolkit for Multi-Target Multi-Camera tracking (MTMCT) systems.
- Constructed a Graph Neural Network architecture to address the re-identification challenge in MTMCT systems.
- Developed a comprehensive speech processing toolkit in TensorFlow, integrating diverse features (e.g., logging, error analysis, on-the-fly data augmentation) to streamline development and debugging.
- Advisor: **Dr. Long Quoc Tran**.

Speech Processing Intern — Oct 2021 - Nov 2022
VinBigData — *Conversational AI solutions* (now VinSmart Future) — *Hanoi, Vietnam*

- Designed a telephony-speech augmentation pipeline in C, achieving a 25% reduction in WER on production benchmarks.
- Developed a neural decoder that outperforms vanilla beam search by 10%.
- Delivered a low-latency streaming ASR ($\approx$ 70ms end-to-end, 12% WER on in-house dataset) for automotive deployment.
- Implemented and maintained company's in-house speech recognition framework.

PUBLICATIONS

(*) Equal contribution

5. Long-Khanh Pham, **Thanh V. T. Tran**, Minh-Tan Pham, Van Nguyen. "Speech Reconstruction from Silent Videos via Acoustic-Semantic Decomposed Modeling". In *Interspeech*, 2025.

4. Cuong Tran Van*, **Thanh V. T. Tran***, Van Nguyen, Truong-Son Hy. "Effective Context Modeling Framework for Emotion Recognition in Conversations". In *ICASSP 2025 - 2025 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2025.

3. **Thanh V. T. Tran***, Nhat Khang Ngo*, Viet Anh Nguyen, Truong-Son Hy. "GROOT: Effective Design of Biological Sequences with Limited Experimental Data". In *Proceedings of the 31st ACM SIGKDD Conference on Knowledge Discovery and Data Mining V.1 (KDD'25)*, 2025.

2. **Thanh V. T. Tran**, Nhat Khang Ngo, Viet Thanh Duy Nguyen, Truong-Son Hy. "LatentDE: Latent-based Directed Evolution for Protein Sequence Design". In *Machine Learning: Science and Technology*, vol. 6, no. 1, p. 015070, 2025 (Q1, IF: 4.6).

1. **Thanh V. T. Tran**, Truong-Son Hy. "Protein Design by Directed Evolution guided by Large Language Models". In *IEEE Transactions on Evolutionary Computation*, vol. 29, no. 2, pp. 418–428, 2025 (Q1, IF: 12).

PREPRINTS & UNDER REVIEW

4. **<u>Thanh V. T. Tran</u>**, Ngoc-Son Nguyen, Luong Tran, Long-Khanh Pham, Paarth Neekhara, Shehzeen Hussain, Van Nguyen. "Precise Video-to-Audio Generation with Cross-Modal Alignment in Latent Space". *Under Review.*

3. Ngoc-Son Nguyen, **<u>Thanh V. T. Tran</u>**, Jeongsoo Choi, Hieu-Nghia Huynh-Nguyen, Truong-Son Hy, Van Nguyen. "DiFlowDubber: Discrete Flow Matching for Automated Video Dubbing via Cross-Modal Alignment and Synchronization". *Under Review.*

2. Ngoc-Son Nguyen, **<u>Thanh V. T. Tran</u>**, Hieu-Nghia Huynh-Nguyen, Truong-Son Hy, Van Nguyen. "DiFlow-TTS: Compact and Low-Latency Zero-Shot Text-to-Speech with Factorized Discrete Flow Matching". *Under Review.*

1. Van Truong Hoang, Viet Pham, **<u>Thanh V. T. Tran</u>**, Van Nguyen, Harry Nguyen. "AgentSound: A LLM-Driven Multi-Agent Framework for Augmenting Sounds with Semantic Context Guidance". *Under Review.*

PRESENTATIONS

Oral paper presentation, KDD 2025   Toronto, Canada

ACHIEVEMENTS

(*) VLSP is one of Vietnam's most prestigious NLP competitions, recently indexed as an ACL workshop.

- Third Prize in Scientific Research Conference for Undergraduates 2023 (*Certificate*).
- Second Prize in Automatic Speech Recognition - Task 1 of VLSP 2022 competition* (*Certificate*).
- Third Prize in Automatic Speech Recognition - Task 2 of VLSP 2022 competition* (*Certificate*).
- UET Merit Scholarship (6 semesters) - VNU University of Engineering and Technology (*Certificate*).

TECHNICAL SKILLS

Programming	Python, Bash, C/C++, LaTeX, Java, SQL, JavaScript, HTML/CSS.
Libraries	PyTorch, TensorFlow, Scikit-learn, TensorFlow Serving.
Developer Tools	Git, Linux, Docker, MongoDB.

LANGUAGES

Vietnamese	Native
English	Advanced (IELTS 7.5)

ACTIVITIES

Data Science Mentor   Jul 2023 - Aug 2023
Math and Science Summer Program (MaSSP)   *Hanoi, Vietnam*

- Instructed high-school students in Calculus and Computer Vision, using both theoretical concepts and visualization (e.g., Grad-CAM, Gradient Descent analogy) for intuitive understanding.
- Supervised a group of 4 students on hand gesture recognition project, covering data processing, modeling, evaluation, and presentation.

REFERENCES

- **Prof. Truong-Son Hy**, Tenure-Track Assistant Professor, The University of Alabama at Birmingham, United States.
  Email: thy@uab.edu. Homepage: https://hytruongson.github.io/HySonLab
- **Dr. Van Nguyen**, Head of Research, FPT Software, United States.
  Email: vannth19@fpt.com. Homepage: https://www.linkedin.com/in/vannguyen8
- **Dr. Long Quoc Tran**, Senior Lecturer, VNU University of Engineering and Technology, Vietnam.
  Email: tqlong@vnu.edu.vn. Homepage: https://scholar.google.com/citations?user=tnDavuYAAAAJ