Huyen Khanh Vo

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Education

2024 - Present **Saarland University (UdS)**, *Saarbrücken, Germany.*
- M.Sc., Major in **Computer Science**

2019 - 2023 **Hanoi University of Science and Technology (HUST)**, *Hanoi, Vietnam.*
- B.Sc., Major in **Computer Science** (Honors Program), CPA: 3.87 / 4.0 (Class rank: 3/35).
- Thesis: Continuous Neural Ordinary Differential Equations [pdf] (**Best Thesis Presentation Award**). Supervised by Dr. Linh V. Ngo.

Experience

Oct 2024 - Present **PhD Student**, *CS@MaxPlanck*, cis.mpg.de/cs-max-planck.
- Advisors: Prof. Isabel Valera (UdS, MPI-SWS).

Nov 2021 - Present **AI Research Resident**, *FPT Software AI Center*, ai.fpt-software.com.
- Advisors: Prof. Tan M. Nguyen (NUS) & Dr. Thieu N. Vo (Ton Duc Thang University).
- **Research topics**: neural odes, conformal prediction and calibration, graph neural networks.
- Proposed novel methods to improve *performance* and *efficiency* of neural odes using optimization methods (nesterov accelerated gradient (momentum optimizer), rmsprop (adaptive optimizer)).
- Ran experiments of Nesterov Neural ODE, RMSprop Neural ODE on time series, continuous normalizing flows, image classification, and point cloud separation.
- **Ongoing project:** Quantified uncertainty of continual learning models using conformal prediction.
  - Ran experiments on class incremental learning settings to verify that continual learning models perform poorly on old tasks in terms of confidence coverage and prediction set size.
  - Proposed a novel method based on exchangeability property to address these limitations.

Apr 2021 - Nov 2021 **Undergraduate Research Student**, *Data Science Laboratory*, ds.soict.hust.edu.vn.
- Advisors: Dr. Linh V. Ngo (HUST) & Prof. Khoat Q. Than (HUST).
- Research topics: continual learning, probabilistic graphical models, variational inference.
- Explored four primary approaches in continual learning, analyzed the strengths and weaknesses of each approach, made comparisons and suggested some improvements.
- Re-implemented key algorithms from each approach.

Jul 2021 - Sep 2021 **Data Analyst Intern**, *VinBigdata*, vinbigdata.com.
- Advisors: Dr. Tham H. Hoang (University of Connecticut).
- Examined responses to the H3N2 influenza challenge using machine learning models.
  - Dataset: GSE61754, genome-wide gene expression data from peripheral blood is taken immediately before the challenge and at 12, 24, and 48 hours post-challenge.

Apr 2021 - Jul 2021 **Data Science Intern**, *Viettel Digital*, digital.viettel.vn.
- Completed courses on deep learning, computer vision, natural language processing, and big data.
- Participated in a Kaggle contest, achieved a ranking of 108/4410 on the final private leaderboard.
  - Predicted customers' loyalty score for payment brands in Brazil [contest, solution].

Publications

2023 **Continuous Neural Ordinary Differential Equations**.
Huyen K. Vo*, Nghia H. Nguyen*, Long M. Bui*, Tan M. Nguyen, Stanley J. Osher, Thieu N. Vo (In preparation).

2022 **Improving Neural Ordinary Differential Equations with Nesterov's Accelerated Gradient Method**.
Nghia H. Nguyen*, Tan M. Nguyen*, **Huyen K. Vo**, Stanley J. Osher, Thieu N. Vo (**NeurIPS**: Conference on Neural Information Processing Systems, 2022, **rank A***) [pdf].

2022 **Development of Vietnamese Text-To-Speech for VLSP Challenge 2021**.
Le Minh Nguyen, Do Quoc An, Vu Quoc Viet, **Vo Thuc Khanh Huyen** (**VNU Journal of Science**: Computer Science and Communication Engineering, 2022)[pdf].

Achievements

2023 **Second Place in FPT Software AI Center Hackathon**, *Building LLM applications.*
- Created a travel planner app using the ChatGPT API, Google reviews API and Langchain agents to design personalized itineraries based on customers' preferences.

2022 **Second Place in UET Hackathon**, *Track: Data Science, [contest, solution].*
- Predicted the income based on people's demographic and work experience.

2021 **First Place in the shared task of Text To Speech, VLSP 2021**, *The 8th International Workshop on Vietnamese Language and Speech Processing, [contest, solution].*
- Developed a novel Vietnamese text-to-speech model, achieving 3.729 in-domain MOS, 3.557 out-of-domain MOS and 79.70% SUS score.
- Proposed an effective method to preprocess a dataset that only consists of spontaneous audio, trained a FastSpeech 2 acoustic model with some replacements in the external aligner model and used HiFiGAN vocoder to construct the waveform.

2019 **Vietnam Mathematics Olympiad (VMO)**, *Third prize (2019).*

Technical Skills

Languages	Python, R, Java, C/C++.
Frameworks	PyTorch, Tensorflow, Keras, Scikit-learn, SciPy.
DevOps	Linux, Bash, Docker.

Languages

Vietnamese	Native.
English	IELTS Overall 7.5: Reading 8.5, Listening 8.0, Writing 6.5, Speaking 6.5.
Others	German, Japanese, Korean.

Extracurricular Activities

2023 **Vietnam Summer School of Science (VSSS) '10**, *Participant.*

2022 **Pre-PhD Summer School by VinUni-Illinois Smart Health Center**, *Participant.*

2021 - 2022 **Student Association's Educational Support Department, HUST**, *Member.*

2019 - 2021 **FPT Center for Young Talents (FYT)**, *Member.*

2020 **Hanoi Math Modelling**, *Content Team.*