Thu T. H. Doan

Personal Information

Name:	Thu Thi Hoai Doan
Gender:	Female
Place of Birth:	Namdinh, Vietnam
Address:	L'Aquila, Italy
Email:	thihoaithu.doan@gssi.it
Family status:	Single
Nationality:	Vietnamese

Profile

I am a Ph.D. student in Computer Science at Gran Sasso Science Institute (GSSI), Italy. I obtained my bachelor's and master's degrees at VNU University of Engineering and Technology (VNU-UET), Vietnam. During my master's program, I worked as a researcher at the Laboratory of Software Quality Assurance (SQALab), Department of Software Engineering, VNU-UET, Vietnam. I had some experience with automated test data generation, especially for Java/TypeScript applications. My research areas were software testing, program analysis, and test case generation. Since 2022, the scope of my research has expanded to include the application of AI/ML techniques to solve real-world problems, particularly in the area of recommendation systems, anomaly detection, and data quality. I am especially focused on time series data collected by multiple sensors involved in manufacturing processes within industrial companies. Through my Ph.D. work, my objective is to develop innovative solutions that can effectively detect abnormal behaviors of factory machines. This will enable us to generate precise predictions and provide early warnings to prevent actual failures in production processes.

Education

Present	PhD student in Computer Science
	Gran Sasso Science Institute (GSSI), L'Aquila, Italy
11/2023–Present	Studying PhD in Computer Science at GSSI, L'Aquila, Italy
Thesis topic	Automated Failure Prediction on Multivariate Time Series Data, Anomaly Detection, Data Quality Control

8/2022	Master of Computer Science
	VNU University of Engineering and Technology, Hanoi, Vietnam
09/2020–8/2022	Studied Computer Science at VNU University of Engineering and Technology, Hanoi, Vietnam
Thesis title	A high coverage automated test data generation method for TypeScript Applications
GPA	3.85/4.0

6/2020	Bachelor of Information Technology (Honors Program)
	VNU University of Engineering and Technology, Hanoi, Vietnam
9/2016–6/2020	Studied Information Technology at VNU University of Engineering and Technology, Hanoi, Vietnam
Thesis title	Developing an automated unit testing tool for TypeScript projects
GPA	3.77/4.0

Major Research Topics of Interest

- **Anomaly detection, data quality control for time series data.**
- **Machine learning for software engineering.**
- **Recommender systems for software engineering.**
- **Automated test data generation.**
- **Static testing, concolic testing.**
- **Program analysis, change impact analysis.**

Work Experience

11/2023 – Present: PhD student in Computer Science at GSSI, L'Aquila, Italy:

- **Principal investigator**: Investigate practical AI/ML solutions to effectively forecast factory machine failures in industrial companies. This work is sponsored by Sanofi company in L'Aquila, Italy;
- **Participant** in Civil Protection Project: Build food prediction system for L'Aquila, performing anomaly detection algorithms on time series data;

8/2020 – 7/2023: working at Laboratory of Software Quality Assurance, VNU University of Engineering and Technology, Vietnam:

- **Principal investigator**: Apply several cutting-edge pre-trained models to perform summarization tasks on software artifacts;
- **Participant** in Project: Apply graph neural networks in edge detection to classify electrocardiogram signals;
- **Principal investigator**: Apply static testing techniques to automatically generate test data for TypeScript server-side web applications;
- **Teaching assistant**: Teach object-oriented programming in practice, and several basic office computer skills (Word, PowerPoint, Excel).

9/2016 - 6/2020: studying at the Faculty of Information Technology, VNU University of Engineering and Technology, Vietnam:

- **Principal investigator**: Develop approaches for automated unit testing generation for TypeScript functions;
- **Participant** in Project: Change Impact Analysis for C/C++ projects;
- **Participant** in Project: Develop OASIS - A system of Object Oriented Programming exercises for students of the university.

Programming and relevant skills

- General knowledge about machine learning;
- Skills with LaTeX, and scientific writing;
- Skills with Pandas, Numpy, and Scikit-learn in Python;
- Basic knowledge about the Linux operating system;
- Familiar with data structure, databases (MySql, MongoDB), tools (Git, JetBrains IDEs), Docker;
- Skills in object-oriented languages like Java and Python;
- Basic skills with Deep Learning frameworks including TensorFlow, and PyTorch;
- Familiar with certain Jupyter notebook environments such as Google Colab, and Kaggle;

Scientific Profiles

- Google Scholar: https://scholar.google.com/citations?user=u88raEkAAAAJ&hl=en;

Publications

Journal papers

- Linh T. Duong, **Thu T. H. Doan**, Cong Q. Chu, Phuong T. Nguyen, "*Fusion of edge detection and graph neural networks to classifying electrocardiogram signals*," Elsevier Expert Systems with Applications (ESWA), 2023, ISSN: 0957-4174, DOI: 10.1016/j.eswa.2023.120107.

Conference papers

- **Thu T. H. Doan**, Phuong T. Nguyen, Juri Di Rocco, Davide Di Ruscio, *"Too long; didn't read: Automatic summarization of GitHub README.MD with Transformers,"* in Proceedings of the International Conference on Evaluation and Assessment in Software Engineering (EASE 2023), Oulu City, Finland, 2023, DOI: 10.1145/3593434.3593448, *to appear*.
- **Thu T. H. Doan**, Le Duy Quang, Duc-Anh Nguyen, Pham Ngoc Hung, "A Method of Automated Mock Data Generation for RESTful API Testing," 2022 RIVF International Conference on Computing and Communication Technologies (RIVF), Ho Chi Minh City, Vietnam, 2022, pp. 376-381, DOI: 10.1109/RIVF55975.2022.10013835.
- **Thu T. H. Doan**, Duc-Anh Nguyen, Pham Ngoc Hung, "Automated Test Data Generation for Typescript Web Applications," 2021 13th International Conference on Knowledge and Systems Engineering (KSE), Bangkok, Thailand, 2021, pp. 1-6, DOI: 10.1109/KSE53942.2021.9648782.

References

- Prof. Patrizio Pelliccione
  Full Professor and Director
  Faculty of Computer Science
  Gran Sasso Science Institute (GSSI)
  Address: Viale Francesco Crispi, 7 - 67100 LAquila (AQ) - Italy
  Email: patrizio.pelliccione@gssi.it

- Dr. Pham Ngoc Hung
  Associate Professor
  Faculty of Information Technology
  VNU University of Engineering and Technology
  Address: E3 Building, 144 Xuan Thuy, Cau Giay, Hanoi, Vietnam
  Email: hungpn@vnu.edu.vn

- Dr. Phuong T. Nguyen
  Associate Professor
  Department of Information Engineering, Computer Science and Mathematics
  University of L'Aquila
  Address: Via Vetoio snc, 67100, L'Aquila, Italy
  Email: phuong.nguyen@univaq.it

Honours and Awards

- VINIF Domestic Master Scholarship Program (2021, 2022);
- **VNU-UET**. Certificate of Excellent Bachelor Thesis (2020);
- Microsoft YouthSpark Scholarship for female students (2018);
- **VNU-UET**. University scholarship for outstanding students (2016 - 2020).

Miscellany

- **Languages**: Vietnamese (native), and English (good - IELTS 6.5);
- **Soft skills**: logical thinking, time management, teamwork, and adaptability;
- **Hobbies**: playing chess, reading, watching movies.