VO Thi-Quynh-Trang

PhD Student

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Research interests

Areas **Combinatorial Optimization** and interactions with **Machine Learning**

Keywords *Integer Programming, Branch-and-Cut, Fair and Balanced Combinatorial Optimization, Polyhedral Combinatorics, Deep Learning, Reinforcement Learning*

Education

Nov 2020 - **Ph.D. in Applied Mathematics and Informatics**, *LIMOS, Clermont - Auvergne University*,
Jan 2024 Clermont–Ferrand, France
(expected) Subject: **Algorithms and Machine Learning for fair and classical combinatorial optimization.**
Supervisors: NGUYEN Viet Hung and BAIOU Mourad.

Apr 2019 - **Master of Science in Applied Mathematics and Informatics**, *SAMI, Hanoi University*
Sep 2020 *of Science and Technology*, Vietnam
Thesis title: **Deep Learning Models in Natural Language Processing.**
Supervisor: LE Chi Ngoc.
Grade: *Very good.*

Sep 2014 - **Bachelor in Mathematics**, *Department of Mathematics, Hanoi National University of*
Jun 2018 *Education*, Vietnam
Program: **Talented Bachelor of Mathematics.**
Grade: *Excellent.*

Publications

[1] **T-Q-T. Vo**, M. Baiou, V-H. Nguyen, and P. Weng. Improving Subtour Elimination Constraint Generation in Branch-and-Cut Algorithms for the TSP with Machine Learning. In *Learning and Intelligent Optimization Conference*, Nice, France, June 2023.

[2] **T-Q-T. Vo**, M. Baiou, and V-H. Nguyen. A Branch-and-Cut algorithm for the Balanced Traveling Salesman Problem. *Submitted to Journal of Combinatorial Optimization*, January 2023.

[3] M-H. Nguyen, M. Baiou, V-H. Nguyen, and **T-Q-T. Vo**. Generalized Nash Fairness solutions for Bi-Objective Minimization Problems. *Networks Journal*, August 2023.

[4] **T-Q-T. Vo**, M. Baiou, V-H. Nguyen, and P. Weng. A comparative study of linearization methods for Ordered Weighted Average. In *International Workshop on Resilient Networks Design and Modeling*, Compiegne, France, September 2022.

[5] M-H. Nguyen, M. Baiou, V-H. Nguyen, and **T-Q-T. Vo**. Nash fairness solutions for balanced TSP. In *10th International Network Optimization Conference (INOC)*, Aachen, Germany, June 2022.

Presentations

Jun 2023 **Improving subtour constraints generation in B&C algorithms for TSP with ML**, *LION17*, Nice, France

Sep 2022 **A comparative study of linearization methods for OWA**, *RNDM12*, Compiegne, France

Nov 2021	**MIP formulations for OWA Traveling Salesman Problems**, *PGMODays 2021*, Paris, France
Jun 2021	**IP formulations for equitable Traveling Salesman Problems**, *ECCO34*, Virtual

Teaching experience

Mar 2023 - Apr 2023	**(Teaching assistant) Implementation of database management systems**, *Undergraduate level, Department of Computer Science*, ISIMA, UCA
Feb 2023	**(Teaching assistant) Reinforcement Learning**, *Graduate level, Department of Computer Science*, ISIMA, UCA
Dec 2018 - Dec 2019	**(Teacher) Secondary Mathematics**, *Department of Mathematics*, Vinschool, Vietnam

Professional experience

Jan 2019 - Jun 2020	**Research engineer**, *iCOMM Media & Tech, Jsc*, Ha Noi, Viet Nam. Developed Deep Learning models for Vietnamese Natural Language Processing and Computer Vision.
Dec 2018 - Dec 2019	**Secondary Mathematics teacher**, *Vinschool*, Ha Noi, Viet Nam

Prizes and Awards

2016 - 2018	**Scholarship of Vietnam Institute for Advanced Study in Mathematics**
2016 - 2018	**Scholarship of Hanoi National University of Education for excellent students**
2015	**Third Prize in Vietnamese Mathematics Olympiads for Undergraduate**
2014	**Second Prize in Vietnamese Mathematics Olympiads for Gifted High School Students**

Techincal skills

Programming language	**C++, Python**
MIP solver	**CPLEX, SCIP**
Machine Learning	**PyTorch, Tensorflow, PyG, sklearn, gym**
Operating system	**Window, Ubuntu, Debian**
Others	**RESTful API, Slurm**