QUANG-ANH PHAM

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EDUCATION

Bachelor of Computer Science (Honors Program)   2017 – 2021

University of Engineering and Technology - Vietnam National University, Hanoi   Vietnam

- GPA: 3.6/4.0 (First-Class Honours)
- Achieve a perfect score of 10.0/10.0 with the thesis "A Hybrid Genetic Algorithm for the Vehicle Routing Problem with Roaming Delivery Locations"

RESEARCH INTERESTS

Artificial Intelligence, (Deep) Reinforcement Learning, Heuristic Search, Operations Research, Vehicle Routing Problem, Scheduling, Integer & Dynamic Programming, Metaheuristic.

WORK EXPERIENCE

Research Engineer   December 2023 – Present

SMU School of Computing and Information Systems   Singapore

Research Engineer   November 2022 – October 2023

Samsung SDS R&D Center   Vietnam

- Study Job Scheduling (Dispatching) Problems with HPC Applications in Cloud Computing Environments
- Optimize trucking plan for customers based on the Cello Square Logistics platform data.

Research Assistant   April 2020 – November 2022

ORLab   Vietnam

- Work in some industrial projects on healthcare and logistics
- Study variants of the Vehicle Routing Problem.

Research Intern   February 2018 – March 2020

ORLab   Vietnam

- Learn Combinatorial Optimization, Operations Research, Metaheuristic
- Attend some optimization challenges.

PUBLICATIONS

[1] **An efficient hybrid genetic algorithm for the quadratic traveling salesman problem**.
Quang Anh Pham, Hoong Chuin Lau, Minh Hoàng Hà, Lam Vu.
International Conference on Automated Planning and Scheduling (ICAPS), pages 341-351, 2023.
Rank A* - Acceptance rate ≈ 30%.

[2] **A hybrid genetic algorithm for the vehicle routing problem with roaming delivery locations**.
Quang Anh Pham, Minh Hoàng Hà, Duy Manh Vu, Huy Hoang Nguyen.
International Conference on Automated Planning and Scheduling (ICAPS), pages 297-306, 2022.
Rank A* - Acceptance rate ≈ 30%.

[3] **The bike routing problem with energy constraints**. *(under review)*
Yannis Ancelea, Quang Anh Pham, Minh Hoàng Hà, Dante Ben Matellinia, Trung Thanh Nguyen.

[4] **The set team orienteering problem**. *(under review)*
Tat Dat Ngyen, Rafael Martinelli, Quang Anh Pham, Minh Hoàng Hà.

Auto Trucking Plan Optimizer
June 2023–October 2023

Samsung SDS

- **Scope**: The optimizer is required to automate the planning process for delivering over a thousand requests daily. The generated plan needs to satisfy all customer constraints, such as capacity and time windows, while matching or even outperforming the manual plan.
- Develop a data pipeline for processing, and storing the map data of customer stores. It helps to detect anomalies in the input data e.g. wrong coordinates. A graph transformation method is proposed to integrate some special customer requirements into ORTools to automatically generate the routing plan.
- Experiments on historical as well as real-time data over several months show that our approach surpasses the manual one in terms of cost metrics. Additionally, planning times have been reduced from hours to minutes.

Cloud Platform GPU Job Scheduler
December 2022–February 2023

Samsung SDS

- **Scope**: The job scheduler helps distribute limited resources (GPUs) when there are multiple distributed-training tasks requested in a computing cluster. Various metrics like fairness, or GPU consumption rate are taken into account.
- Develop and compare constraint programming and heuristic methods for efficiently assigning tasks selected by a Deep Reinforcement Learning agent into available GPUs.
- On the realistic benchmarks, our team approach outperforms traditional methods (First In First Out, Bin Packing, etc) and has a competitive performance with a Deep Multi-agent Reinforcement Learning algorithm proposed by another team.

Smart Logistics System
January 2021–October 2021

ORLab

- **Scope**: Developing a module that automatically creates a profitable plan for transporting containers based on the information obtained from the logistics system of the customer.
- Communicate with both dev and BA teams from the customer company to define the problem as well as design the solution
- Research, implement and test some efficient algorithms (Genetic Algorithm and Large Neighborhood Search) which are then packaged into APIs that the customer system can access. The created solution **plays an important role in some later successful POCs.**

O-HOS, A Hospital Staff Management System
September 2019–December 2020

ORLab

- **Scope:** The system aims to manage the information and job calendar of hundreds of employees at some departments of a large hospital in Hanoi.
- Work as a Business Analyst to collect requirements for a department and co-design DB with the dev team.
- Develop a Mixed Integer Programming approach to deal with the nurse scheduling problem which results in **reducing the manual planning time from hours to minutes.**

VeRoLog Solver Challenge 2019
September 2018 – March 2019

ORLab

- Topic: Multi-trip and multi-depot vehicle routing problem with rich constraints
- Supervisor: Dr. Ha Minh Hoang
- Take **4th** rank at the final phase

ROADEF/EURO Challenge 2018
February 2018 – June 2018

ORLab

- Topic: Two-dimensional bin-packing problem with defect constraints
- Supervisors: Dr. Ha Minh Hoang, Dr. Do Duc Dong
- Achieve **6th** rank in the qualification phase

HONORS AND AWARDS

Champion of PROCON Vietnam 2019   December 2019
My team built a Monte Carlo Tree Search algorithm that outperformed other teams in the competition

The Dean's list   Fall 2020
Semester GPA above 3.9 at VNU University of Engineering and Technology

Third Prize of National Informatics Contest   2017
National Informatics Contest is a programming contest for high school students in Vietnam.

SKILLS

Languages: Vietnamese (Native), English (IELTS: 7.0)
Programming Languages: C++ , Python, Java
Optimization Softwares: CPLEX, OR-Tools
Deep Learning Frameworks: Pytorch
Others: Pandas, Plotly, Overleaf, Git