CHUAN PHAM

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## Present position

• Research Associate of Synchromedia Lab, École de technologie supérieure (ETS), Université du Québec

## Background education and experiences

I graduated the bachelor of computer engineering at the University of Transport in Ho Chi Minh City, Vietnam, in 2004. I received an offer to work as a lecture in the Information Technology department, which was granted for the best student in my department. This period also laid a solid foundation and passion as well to make me go deeper into the academic way until now. During this time, I was able to work on Windows, Linux, and Cisco networks. Furthermore, I participated in a web developing project to build a web portal at my university. One year later, I had started the M.Sc. program at the University of Science in Ho Chi Minh City, Vietnam, and graduated in 2008. My master thesis was applied to the search engine of the web portal in my university to improve the search performance based on a weblog mining method. After that, I had many chances to work with other universities and institutes with different education projects including web portal systems, e-learning systems.

To expand my knowledge, I successfully passed the interview to join the networking lab of Professor Choong Seon Hong at the Kyung Hee University, which is one of the best universities in Korea. I spent 4 years to complete my Ph.D. in the virtual networking field that has been widely used in wireless communication and data center core network. My Ph.D. thesis specifically focused on applying optimization methodologies into resource allocation in data center networks to reduce the operational cost and improve the performance of the system. Specifically, I proposed a new optimization method combining a matching game and convex optimization methods to answer where network functions, e.g., Firewall, Gateway, etc., could be efficiently placed in the substrate network. In addition, I also investigated green solutions in data centers to reduce power consumption. In such a topic, I especially worked with Professor Shaolei Ren, University of California, Riverside, to deal with the water-saving issue in data centers, in the US. During my Ph.D. period, I participated in key lab projects related to Software Defined Networking (SDN), Network Function Virtualization (NFV), network slicing in 5G supported by Samsung company, and the BK21 project.

Besides the academic field, I also have good industry experience since I worked nearly 3 years in Skypatrol, U.S as an off-shore software developer from 2014 to 2017. In particular, I was a team leader of the web developer group that was responsible for developing web applications for Skypatrol such as managing and tracking GPS devices, managing orders system, shopping online, dashboard systems. Those systems are built from PHP with Laravel framework.

Currently, working in ETS, I am focusing on Optimization and Machine learning topics applying cutting-edge network applications. In particular, I investigate some following topics:

* Network automation: Optimizing update schedules in SDN (Simulation environments: Mininet, GNS3, Python and Gurobi).
* Classify traffic flows into QoS classes using Reverse k-Nearest Neighbor (RkNN) method.
* Apply Deep Learning to analyze log files in Wifi Access point to mining user behaviors.
* Apply Deep Learning into WiFi slicing.
* Applying Deep Learning and optimization to improve IoT service chain deployment.
* Applying optimization and reinforcement learning to optimize LoRa networks (Simulation environments: GNS3, Python, Pytorch and Gurobi).
* Using Reinforcement learning to control UAV base stations to deploy flying 5G networks.

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| **Time** | **University** | **Major** | **Rank** | **Thesis** |
| 2000/09/01-2004/10/25 | University of Transport in Ho Chi Minh City | Computer Science | Bachelor | Developing CMS system for University of Transport |
| 2005/09/05-2008/10/22 | University of Science in Ho Chi Minh City | Computer Science | Master | Improving local website search  engine by using Web Server Logs |
| 2013/03/02-2017/08/16 | Kyung Hee University | Computer Engineering | PhD | Approximation and Matching Game Approaches for Network Service Chain Placement on Cloud Datacenters |

## Employment records

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| **Name and Address of Organization** | **Period of Employment** | **Position** | **Type of Work** |
| Synchromedia Lab, École de technologie supérieure (ETS) Université du Québec | 12/2017-5/2020 | Postdoc | Research, Team leader |
| Department of computer science and engineering, Kyung Hee University | 8/2017-11/2017 | Postdoc | Research |
| Skypatrol US | 2014-2017 | Team leader for an offshore team in Vietnam | Web developer as a freelancer |
| Department of computer science and engineering, Kyung Hee University | 3/2013-8/2017 | Ph.D | Student |
| Nguyen Tat Thanh University 300A, Nguyen Tat Thanh Street, Dist 4, HCMC, VietNam | From 2010 To 2012 | Vice Dean of IT Faculty | Managing |
| University of Transport in HCM 2, D3 St, Ward 25, Binh Thanh Dist, HCMC, Viet Nam | From 2004 To 2012 | Lecturer | Teaching |
| Thu Dau Mot University No 6, Tran Van On Street, Thu Dau Mot City, Binh Duong Province, Viet Nam | From 2009 To 2012 | Lecturer | Teaching |
| Institute of Information Technology 120, Su Van Hanh Street, Dist 10, HCMC, Viet Nam | From 2006 To 2008 | Project manager | Managing |

## Other skills

* Teamwork: I have successfully undertaken various team projects within both academic and non-academic environments.
* Communication: I have good skills in presentations and in talking to the general public.
* Teaching: I have good experience in teaching and training. From 2016 until now, I have participated as a teaching assistant and lecturer in many optimization classes.
* Programming:
  + Able to develop web-apps, and implement research simulations with well-known programming languages: PHP, Laravel, Python, JULIA Optimization, MATLAB, Tensor flow.
  + Familiar with Git environments and procedures to handle and deploy source codes into Git systems.
  + Have experience working with the CI/CD pipeline such as Circleci and Jenkins.
  + Have good hands-on skills to work with the docker environments such as building a web system to deploy multiple web services (web server Apache, web caching, database).
  + Able to develop applications following Test-driven development (TTD).
  + Have good experience in project management systems such as Trello, Redmine.

## Projects

1. Cloud-based M2M Smart home project (Python): Building a controller system to manage IoT service with Opendaylight, Mininet for simulation.

* Implementing a controller placement simulation in Python to analyze the latency of processing and network traffic.
* Applying approximation and optimization to find the optimal solution for controller placement.

2. Deploy IoT services in smart cities: Developing an IoT framework to deploy IoT services on Edge and Cloud.

* Using Julia and Python to develop a dynamic resource allocation for IoT service deployment in Edge-Cloud based network.
* Developing a Low-Power Wide-Area (LPWA) network for smart cities.
* Developing a Wifi slicing architecture for IoT network.
* Developing a framework for wifi slicing.
* Developing a model of component-based software update in IoT network.
  + Developing a smart IoT gateway to optimize energy.
  + Using machine learning – neural network with Torch and Tensor flow -to improve the convergence of the branch and bound algorithm to find the solution in an efficient way.
  + Teaching:
    - Network optimization course for lab members
    - Programming networking with Python
    - Queueing model for networking

3. Developing and maintaining web-apps

1. Wordpress applications: Developing and maintaining the website of Synchromedia Labs and a charity organizations based on Wordpress framework: <https://beta.synchromedia.ca/>; http://www.honourkids.com/.
2. Skypatrol - MyOrder (Web service system, PHP): Building a web service system to handle thousands of orders in Skypatrol company. The main platform is PHP framework but it works with SQL server since that datatabase system was built before with a window application.
3. Skypatrol - Opencart (web service system, PHP, Opencart framework): Developing a shopping service to process orders online and synchronize to MyOrder system.
4. Skypatrol - Dashboard system (Web service system, PHP, Laravel framework): Developing a dashboard management system to show the statistic of orders, errors, tracking items.
5. Skypatrol - Tracking GPS devices (Web service system, PHP, Laravel framework): Developing a web service for tracking GPS devices.

## New Publications

*Google Scholar:* [*https://scholar.google.com/citations?hl=en&user=nn\_V-bQAAAAJ*](https://scholar.google.com/citations?hl=en&user=nn_V-bQAAAAJ)

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| [Citations](javascript:void(0)) | 538 | 535 |
| [h-index](javascript:void(0)) | 11 | 11 |
| [i10-index](javascript:void(0)) | 13 | 13 |

1. Chuan Pham, Duong Tuan Nguyen, Yosra Njah, H. Tran, Nguyen, Kim Khoa Nguyen, and Mohamed Cheriet, Share to Run IoT Services in Edge Cloud Computing, IEEE Internet of Things Journal (Accepted, 2021)
2. Chuan Pham, Duong Tuan Nguyen, H. Tran, Nguyen, Kim Khoa Nguyen, and Mohamed Cheriet, Optimized IoT Services Chain Implementation in  Edge Cloud Platform: a Deep Learning Framework, TNSM (Accepted, 2020)
3. Cheng Cheng Zhang, Chuan Pham, Kim Khoa Nguyen, and Mohamed Cheriet, "Routing and Packet Scheduling in LoRaWANs-EPC Integration Network", Globecom 2020.
4. Njah yosra, Chuan Pham, and Mohamed Cheriet, Service and Resource Aware Flow Management Scheme For an SDN-based Smart Digital Campus Environment (Accepted, IEEE Access, 2020)
5. Foroutan Fami, Chuan Pham, and Kim Khoa Nguyen, "Towards IoT Slicing for Centralized WLANs in Enterprise Networks", Accepted, ISNCC 2020
6. Chuan Pham, Duong Tuan Nguyen, H. Tran, Nguyen, Kim Khoa Nguyen, and Mohamed Cheriet, Learning Framework for IoT Services Chain Implementation in Edge Cloud Platform (Accepted, ICC 2020)
7. Tran, Anh Khoa, Md Piran, and Chuan Pham. "SDN Controller Placement in IoT Networks: An Optimized Submodularity-Based Approach." Sensors 19.24 (2019): 5474.
8. Duong Tuan Nguyen, Kim Khoa Nguyen, Chuan Pham, and Mohamed Cheriet, "Placement and Chaining for Run-time IoT Service Deployment in Edge-Cloud", TNSM (Accepted, 2019)
9. Tran Thi Kim, Oanh; H. Tran, Nguyen; Pham, Chuan; LeAnh, Tuan; Thai, My; Hong, Choong Seo, "Parking Assignment: Minimizing Parking Expenses and Balancing Parking Demand among Multiple Parking Lots” , IEEE Transactions on Automation Science and Engineering (Accepted).
10. Duong Tuan Nguyen, Kim Khoa Nguyen, Chuan Pham, and Mohamed Cheriet, "SACO: A Service Chain Aware SDN Controller-Switch Mapping Framework", CNSM 2019 (Accepted)
11. Hai Bui Ngoc, Kim Khoa Nguyen, Chuan Pham, and Mohamed, "Energy Efficient Scheduling for Networked IoT Device Software Update", CNSM 2019 (Accepted).
12. Hai Bui Ngoc, Kim Khoa Nguyen, Chuan Pham, and Mohamed, "Energy Efficient Software Update Mechanism for Networked IoT Devices", Globecom 2019 (Accepted)
13. Duong Tuan Nguyen, Kim Khoa Nguyen, Chuan Pham, and Mohamed Cheriet, "Virtual Network Function Placement in IoT Network", IWCMC 2019 IoT Symposium, (Accepted).
14. Amor, Mohamed Ghazi, Kim Khoa Nguyen, Chuan Pham, and Mohamed Cheriet. "Optimized Flow Assignment in a Multi-Interface IoT Gateway.", IWCMC 2019 IoT Symposium, (Accepted)

*(All the publications are updated in* [*https://sites.google.com/site/pchuanvn/project-updates*](https://sites.google.com/site/pchuanvn/project-updates)*)*

## 

## References

1. Dr. Mohamed Cheriet   
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