Nguyen Quang Hieu

• Email: hieu.nguyen-1@student.uts.edu.au • Skype: hieu1204@gmail.com
• Personal website: [Link] • Google Scholar: [Link]

BRIEF BIO

I am currently a PhD candidate at the University of Technology Sydney (UTS) in Australia. I focus on applied machine learning techniques for wireless communications and networking. I have special interests in deep reinforcement learning, generative models, probabilistic graphical models, and their potential applications in communications and networking systems. My contributions to the research fields include blockchain networks, integrated sensing-communications, edge computing, virtual reality, brain-computer interfaces, and 3D body tracking, but please see [Scholar] for a more complete list. Before joining UTS, I worked as a research assistant at Nanyang Technological University, Singapore, from 2019 to 2021. Before that, I obtained a Bachelor's degree from Hanoi University of Science and Technology, Vietnam, in 2018.

EDUCATION

University of Technology Sydney, New South Wales, Australia

- Ph.D candidate in Electrical and Data Engineering — Nov 2021 – now
  - Supervisor: Dr. Hoang Dinh
  - Focus: Wireless Communications, Reinforcement Learning, Deep Learning, Optimization

Hanoi University of Science and Technology (HUST), Hanoi, Vietnam

- Bachelor in Electronics and Telecommunications Engineering — Aug 2013 – Jun 2018
  - Cumulative GPA: 3.01/4 (7.72/10)
  - Thesis (score): Integrating Trickle timing in Software-Defined WSNs for energy efficiency (9.8/10)
  - Supervisor: Assoc. Prof. Nguyen Huu Thanh
  - Focus: Wireless Sensor Networks, Energy-efficient routing/scheduling, Software Defined Networking

RESEARCH EXPERIENCE

Computer Networks and Communications Lab (CNCL), School of Computer Science and Engineering, Nanyang Technological University

- Research Engineer — Apr 2019 – Oct 2021
  - Supervisor: Prof. Dusit Niyato
  - Focus: Resource allocation in wireless networks, Deep reinforcement learning, Blockchain.
- Activities:
  - Develop a deep reinforcement learning-based algorithm to optimize energy, latency, and CPU resources in blockchain-based/distributed machine learning networks.
  - Develop energy forecasting models for solar panels system using deep learning.

Future Internet Laboratory, School of Electronics and Telecommunications, HUST

- Undergraduate Research Student — Aug 2016 – Mar 2019
  - Supervisors: Assoc. Prof. Nguyen Huu Thanh
  - Focus: Internet of Things, SDN/NFV, Network Security
- Activities:
  - Develop a routing mechanism and design a software controller in Wireless Sensor Networks based on Software Defined Networking for energy-efficient routing.
  - Optimize data scheduling in Wireless Sensor Networks based on Time Slotted Channel Hopping (TSCH) for energy efficiency and data reliability. Proposed algorithm is implemented in a real-world testbed which consists of 70 sensors.

PUBLICATIONS

JOURNALS

[J8] N. Q. Hieu, D. N. Nguyen, D. T. Hoang, and E. Dutkiewicz, "When virtual reality meets rate splitting multiple access: A joint communication and computation approach," *IEEE Journal on Selected Areas in Communications*, vol. 41, no. 5, pp. 1536-1548, May 2023 (IF=16.4, Q1).

[J7] N. Q. Hieu, D. T. Hoang, D. Niyato, D. N. Nguyen, D. I. Kim, and A. Jamalipour, "Joint power allocation and rate control for rate splitting multiple access networks with covert communications," *IEEE Transactions on Communications*, vol. 71, no. 4, pp. 2274-2287, Apr. 2023 (IF=8.3, Q1).

[J6] N. Q. Hieu, D. T. Hoang, D. Niyato, P. Wang, D. In Kim, and C. Yuen, "Transferable deep reinforcement learning framework for autonomous vehicles with joint radar-data communications," *IEEE Transactions on Communications*, vol. 7, no. 8, Aug. 2022 (IF=8.3, Q1).

[J5] N. Q. Hieu, T. T. Anh, N. C. Luong, D. Niyato, D. I. Kim, and E. Elmroth, "Resource management for blockchain-enabled federated learning: A deep reinforcement learning approach," *IEEE Networking Letters*, vol. 4, no. 3, Sep. 2022.

[J4] K. S. H. Ong, W. Wang, N. Q. Hieu, D. Niyato, and T. Friedrichs, "Predictive maintenance model for IIoT-based manufacturing: A transferable deep reinforcement learning approach", *IEEE Internet of Things Journal*, vol. 9, no. 17, Sep. 2022 (IF=10.6, Q1).

[J3] N. Q. Hieu, D. T. Hoang, N. C. Luong, and D. Niyato, "Optimal power allocation for rate splitting communications with deep reinforcement learning", *IEEE Wireless Communications Letters*, vol. 10, no. 12, Oct 2021 (IF=6.3, Q1).

[J2] N. V. Tam, N. Q. Hieu, N. T. T. Van, N. C. Luong, D. Niyato, and D. I. Kim, "Adaptive task offloading in coded edge computing: A deep reinforcement learning approach", *IEEE Communications Letters*, vol. 25, no. 12, Sep 2021 (IF=4.1, Q1).

[J1] N. Q. Hieu, D. T. Hoang, N. C. Luong, and D. Niyato, "iRDRC: A real-time intelligent dual-functional radar-communication system for automotive vehicles", *IEEE Wireless Communications Letters*, vol. 9, no. 12, Aug 2020 (IF=6.3, Q1).

CONFERENCES

[C5] N. Q. Hieu, D. T. Hoang, D. N. Nguyen, and E. Dutkiewicz, "Toward BCI-enabled Metaverse: A Joint Radio and Computing Resource Allocation Approach," *IEEE Global Communications Conference*, accepted.

[C4] N. Q. Hieu, N. H. Chu, D. T. Hoang, D. N. Nguyen, and E. Dutkiewicz, "A unified resource allocation framework for virtual reality streaming over wireless networks," *IEEE International Conference on Communications*, Rome, Italy, May 2023.

[C3] N. V. Huynh, N. Q. Hieu, N. H. Chu, D. N. Nguyen, D. T. Hoang, and E. Dutkiewicz, "Defeating eavesdroppers with ambient backscatter communications," *IEEE Wireless Communications and Networking Conference*, 2023 (accepted).

[C2] N. Q. Hieu, T. T. Huong, N. T. Hung, N. Q. Thu and N. H. Thanh, "A low-power, high reliable data collection scheme for wireless sensor networks", *2019 International Conference on Advanced Technologies for Communications (ATC)*, Hanoi, Vietnam, Oct 2019, pp. 258-263.

[C1] N. Q. Hieu, N. Huu Thanh, T. T. Huong, N. Quynh Thu and H. V. Quang, "Integrating trickle timing in software defined WSNs for energy efficiency", *2018 IEEE Seventh International Conference on Communications and Electronics (ICCE)*, Hue, Vietnam, Jul 2018, pp. 75-80.

PREPRINTS

[P2] H. Y. Zhu, N. Q. Hieu, D. T. Hoang, D. N. Nguyen, and C.T. Lin, "A Human-Centric Metaverse Enabled by Brain-Computer Interface: A Survey," submitted to *IEEE Communications Surveys & Tutorials* [arXiv].

[P1] N. Q. Hieu, D. N. Nguyen, D. T. Hoang, and E. Dutkiewicz, "Enhancing Immersion and Presence in the Metaverse with Over-the-Air Brain-Computer Interface", submitted to *IEEE Transactions on Wireless Communications* [arXiv].

TEACHING

- Tutor for **IoT Security** (42037), UTS — Feb 2023

AWARDS

- IEEE ComSoc Student Travel Grant, IEEE ICC — Apr 2023
- ARC DECRA Funded Project Scholarship — Nov 2021
- UTS International Research Scholarship (UTS IRS) — Nov 2021
- 4th place, 35th Student's Scientific Research Contest, HUST — May 2018

CERTIFICATIONS

- Research Summer School Certificate - British Council & Newton Fund — Aug 2018
- Certificate in CCNA Switching and Routing (CISCO) — Jul 2017

PROFESSIONAL ACTIVITIES

- Peer review:
  - IEEE Journals on Selected Areas in Communications (JSAC)
  - IEEE Communications Surveys and Tutorial (COMST)
  - IEEE Transactions on Wireless Communications (TWC)
  - IEEE Transactions on Communications (TCOM)
  - IEEE Internet of Things Journal (IOTJ)
  - IEEE Transactions on Cognitive Communications and Networking (TCCN)
  - IEEE Transactions on Vehicular Technology (TVT)
  - IEEE Wireless Communications Letters (WCL)
  - IEEE Communications Letters (CL)

- TPC member:
  - IEEE 97th Vehicular Technology Conference: VTC2023-Spring, 20-23 June 2023, Florence, Italy
  - IEEE Wireless Communications and Networking Conference (WCNC), 26–29 March, 2023, Glasgow, Scotland, UK
  - IEEE Wireless Communications and Networking Conference (WCNC), 10-13 April, 2022, Austin, TX, USA

LANGUAGES

- English: Fluent (speaking, listening, reading, writing).
- Vietnamese: Native.

SKILLS

- Machine Learning: Deep Reinforcement Learning, Deep Learning
- CCNA Switching and Routing
- Programming languages: Python, Java, C/C++
- Simulation tools: Matlab, Cooja, NS2
- Engineering Software/OS: Linux, Contiki OS
- Office tools: Latex, Microsoft Office Tools

REFERENCES

- **Hoang Dinh, Ph.D.**
  Senior Lecturer
  School of Electrical and Data Engineering, Faculty of Information and Technology
  University of Technology Sydney
  Room 202, Level 8, UTS building 11, Ultimo, NSW 2007, Australia
  Email: Hoang.Dinh@uts.edu.au
- **Diep N. Nguyen, Ph.D.**
  Associate Professor
  School of Electrical and Data Engineering, Faculty of Information and Technology
  University of Technology Sydney
  Room 303, Level 8, UTS building 11, Ultimo, NSW 2007, Australia
  Email: diep.nguyen@uts.edu.au
- **Eryk Dutkiewicz, Ph.D.**
  Professor
  Head of School of Electrical and Data Engineering
  Room 102, Level 8, UTS building 11, Ultimo, NSW 2007, Australia
  Email: Eryk.Dutkiewicz@uts.edu.au
- **Dusit Niyato, Ph.D., IEEE Fellow.**
  Professor
  School of Computer Science and Engineering (SCSE) and School of Physical and Mathematical Sciences (SPMS)
  Nanyang Technological University
  Block N4-02a-32, Nanyang Avenue, Singapore 639798
  Email: dniyato@ntu.edu.sg