

Hieu Nguyen

Ph.D. Student
University of Technology Sydney

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EDUCATION

University of Technology Sydney (UTS)

Ph.D., Engineering

Australia

Apr. 2022 - Present

- Thesis: *Advanced Machine Learning for Future Internet-of-Things Systems*

Hanoi University of Science and Technology (HUST)

Vietnam

MA. SC, Computer Science

Nov. 2020 - Nov. 2021

- GPA: 3.83/4

- Thesis: *Multi-UAV Assisted Data Gathering Schemes For Maximizing WSN Lifetime*

Hanoi University of Science and Technology (HUST)

Vietnam

B.Eng., Information Systems

Aug. 2015 - Aug. 2020

EXPERIENCE

Graduate Research Assistant at 5G/6G Wireless Communications and IoT Networking Lab - UTS

2022 - Present

Supervisor: Assoc. Prof. Hoang Dinh and Assoc. Prof. Diep Nguyen

Research on privacy-preserving machine learning, federated learning and edge computing in 5G/6G wireless networks.

Tutor - University of Technology Sydney

2022 - Present

42036 Cyber Security for Mobile Platforms

Research Assistant at SEDIC Lab - HUST

2018 - 2021

Advisor: Assoc. Prof. Khanh-Van Nguyen

Research on wireless sensor networks, network routing and optimization.

SELECTED PUBLICATIONS

Journal articles

- **Chi-Hieu Nguyen**, Yuris Mulya Saputra, Dinh Thai Hoang et al. "Encrypted Data Caching and Learning Framework for Robust Federated Learning-Based Mobile Edge Computing." *IEEE/ACM Transactions on Networking*, 2024.
- Khanh-Van Nguyen, **Chi-Hieu Nguyen**, Tien Van Do, and Csaba Rotter. "Efficient Multi-UAV Assisted Data Gathering Schemes for Maximizing the Operation Time of Wireless Sensor Networks in Precision Farming." *IEEE Transactions on Industrial Informatics*, 2023.

Conference articles

- **Chi-Hieu Nguyen**, Bui Duc Manh, Dinh Thai Hoang et al. "Towards Secure AI-empowered Vehicular Networks: A Federated Learning Approach using Homomorphic Encryption." In *IEEE 100th Vehicular Technology Conference (VTC2024-Fall)*, 2024.
- Bui Duc Manh, **Chi-Hieu Nguyen**, Dinh Thai Hoang et al. "Homomorphic Encryption-Enabled Federated Learning for Privacy-Preserving Intrusion Detection in Resource-Constrained IoV Networks." In *IEEE 100th Vehicular Technology Conference (VTC2024-Fall)*, 2024.
- Md Arif Hassan, Cong T. Nguyen, **Chi-Hieu Nguyen** et al. "A Novel Blockchain-Based Information Management Framework for Web 3.0." In *IEEE Globecom 2024*.
- Mshari Aljumaie, Viet Khoa Tran, **Chi-Hieu Nguyen** et al. "Towards Secure Edge Computing: Advanced Machine Learning Techniques for Detecting Malicious Computing Tasks." In *IEEE Globecom 2024*.

Book chapters

- Mshari Aljumaie, **Chi-Hieu Nguyen**, et al. "Potential Applications and Benefits of Metaverse." *Metaverse Communication and Computing Networks: Applications, Technologies, and Approaches*, 2023.

Preprints

- **Chi-Hieu Nguyen**, Dinh Thai Hoang, Diep N. Nguyen, Kristin Lauter, Miran Kim. "Empowering AI with Privacy: Homomorphic Encryption for Secure Deep Reinforcement Learning", 2024.
- Md Arif Hassan, Mohammad Behdad Jamshidi, Bui Duc Manh, Nam H. Chu, **Chi-Hieu Nguyen** et al. "Enabling Technologies for Web 3.0: A Comprehensive Survey.", 2023.
- Tran Viet Khoa, Do Hai Son, **Chi-Hieu Nguyen** et al. "Securing Blockchain Systems: A Novel Collaborative Learning Framework to Detect Attacks in Transactions and Smart Contracts.", 2023.

HONORS & AWARDS

- Recognized for top performance in multiple algorithmic problem-solving competitions focusing on designing highly efficient building blocks and advanced algorithms for Fully Homomorphic Encryption in applications such as privacy-preserving machine learning, blockchain, and Web3. These competitions were organized and evaluated by FHERMA, OpenFHE, and IBM Research.
 - **1st place**: IBM Array Sorting Challenge, IBM Parity Challenge, CIFAR-10 Encrypted Image Classification Challenge, Ethereum Virtual Machine's Shift Left Opcode Challenge, ReLU Function Challenge (competing under the username **hita2**)
 - **2nd place**: Sign Function, Logistic Function, Max Function, and Lookup Table Challenge
- **ARC DECRA Funded Project Scholarship** 2022
- **UTS International Research Scholarship** 2022
- **VinIF Master's Scholarship for Graduate Students** 2020
- **Best paper award - IEEE RIVF 2019** 2019
- **Vietnam Mathematical Olympiad - Second Place** 2015



SKILLS

- Advanced expertise in privacy-preserving machine learning, including federated learning, homomorphic encryption, and differential privacy.
- Strong experience in using leading homomorphic encryption libraries: Microsoft SEAL, OpenFHE, and Lattigo.
- Proficiency in programming languages: Python, C++, and Matlab.
- Proficiency in deep learning frameworks: TensorFlow and PyTorch.
- Experience in conducting large-scale simulations and deploying privacy-preserving AI solutions.

PROFESSIONAL SERVICES

- TPC Member of IEEE 100th Vehicular Technology Conference (VTC2024-Fall), IEEE Wireless Communications and Networking Conference (WCNC) 2024
- Reviewer for IEEE Transactions of Mobile Computing (TMC), IEEE Transactions on Cognitive Communications and Networking (TCCN), IEEE Transactions on Network Science and Engineering (TNSE), Proceedings of the IEEE
- Secretary of the IEEE Student Branch, University of Technology Sydney, Australia

REFERENCES

- Assoc. Prof. Hoang Dinh - *Principle Supervisor*  hoang.dinh@uts.edu.au
- Website: <https://sites.google.com/view/dinh-thai-hoang/>
- Assoc. Prof. Diep N. Nguyen - *Co-supervisor*  diep.nguyen@uts.edu.au
- Website: <https://sites.google.com/view/diep-n-nguyen/>