

# JOSH (TUAN DUNG) NGUYEN

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## EDUCATION

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### Ph.D. in Computer and Information Science

University of Pennsylvania  
Advisor: Duncan Watts

2023 – now  
*Philadelphia, PA, United States*

### M.Phil. in Computer Science

Australian National University  
Advisors: Lexing Xie and Colin Klein

2021 – 2023  
*Canberra, ACT, Australia*

### B.S. in Computer Science

University of Melbourne  
First class honours

2018 – 2020  
*Melbourne, VIC, Australia*

## EXPERIENCE

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### Research Associate

Research School of Astronomy, Australian National University  
Collaborators: Yuan-Sen Ting and Ioana Ciucă  
Project: *Large Language Models for Astronomical Research*

June 2023 – September 2023  
*Canberra, ACT, Australia*

### Teaching Assistant

COMP4650 *Document Analysis*, Australian National University, 2022.  
COMP4680 *Advanced Topics in Machine Learning*, Australian National University, 2022.  
COMP4670 *Statistical Machine Learning*, Australian National University, 2022.  
COMP5318 *Machine Learning and Data Mining*, University of Sydney, 2021.  
COMP4691 *Optimisation*, Australian National University, 2021.  
COMP30024 *Artificial Intelligence*, University of Melbourne, 2021.  
COMP20008 *Elements of Data Processing*, University of Melbourne, 2020 – 2022.

March 2020 – June 2023

### Summer Research Scholar

Computational Media Lab, Australian National University  
Advisor: Lexing Xie  
Project: *Data-Driven Understanding of Real-Life Moral Dilemmas*

December 2020 – March 2021  
*Canberra, ACT, Australia*

### Research Intern

Faculty of Engineering, University of Sydney  
Advisor: Nguyen Tran  
Project 1: *Federated Learning with Stochastic Variance Reduced Gradient Algorithms*  
Project 2: *Personalized Federated Learning with Moreau Envelopes* (Best CS Project)

December 2019 – August 2020  
*Sydney, NSW, Australia*

### Vacation Research Scholar

School of Mathematics and Statistics, University of Melbourne

November 2019 – December 2019  
*Melbourne, VIC, Australia*

Advisor: Charl Ras

Project: *Analysis and Design of R-Resilient Graph Embeddings*

## RESEARCH INTERESTS

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Computational Social Science, Optimization, Statistical Machine Learning, Distributed Computing, Natural Language Processing, Network Analysis, Statistics, Practical Ethics, AI Safety, Computational Modeling of Social Concepts and Cognitive Science.

## HONORS AND AWARDS

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George M. Ball, Jr. First-Year Ph.D. Fellowship, Department of Computer and Information Science, University of Pennsylvania, 2023.

Ph.D. Fellowship, Department of Computer and Information Science, University of Pennsylvania, 2023 – now.

Vice-Chancellor’s Travel Grant – Higher Degree Research, Australian National University, 2022.

M.Phil. Scholarship, Australian National University, 2021 – 2023.

Summer Research Scholarship, Australian National University, 2020.

Project Recognition, Innovation Expo, Vietnam-Australia Innovation Network (NIC-AU), 2020.

Dean’s Honour List, Faculty of Science, University of Melbourne, 2018 – 2020

Undergraduate Student Scholarship, University of Melbourne, 2020.

Summer Research Scholarship, Faculty of Engineering, University of Sydney, 2020.

Summer Research Scholarship, School of Mathematics and Statistics, University of Melbourne, 2019.

## PUBLICATIONS

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- [1] **Tuan Dung Nguyen**, Yuan-Sen Ting, Ioana Ciucă, Charles O’Neill, Sun Ze-Chang, Maja Maja Jabłońska, Kruk Sandor, Ernest Perkowski, Jack Miller, Jason Jingshi Li, Josh Peek, Kartheik Iyer, Rózański Tomasz, Pranav Khetarpal, Sharaf Zaman, David Brodrick, Sergio J. Rodríguez Méndez, Bui Thang, Alyssa Goodman, Alberto Accomazzi, Jill Naiman, Jesse Cranney, Kevin Schawinski, and Roberta Răileanu. “AstroL-LaMA: Towards Specialized Foundation Models in Astronomy”. In: *Proceedings of the 2nd Workshop on Information Extraction from Scientific Publications*. Bali, Indonesia: Association for Computational Linguistics, 2023, pp. 49–55.
- [2] Canh T. Dinh, Nguyen H. Tran, **Tuan Dung Nguyen**, Wei Bao, Amir Rezaei Balef, Bing B. Zhou, and Albert Y. Zomaya. “DONE: Distributed Approximate Newton-type Method for Federated Edge Learning”. In: *IEEE Transactions on Parallel and Distributed Systems* 33.11 (2022), pp. 2648–2660.
- [3] **Tuan Dung Nguyen**, Georgiana Lyall, Alasdair Tran, Minjeong Shin, Nicholas George Carroll, Colin Klein, and Lexing Xie. “Mapping Topics in 100,000 Real-Life Moral Dilemmas”. In: *Proceedings of the International AAAI Conference on Web and Social Media* 16.1 (2022), pp. 699–710.
- [4] **Tuan Dung Nguyen**, Amir R. Balef, Canh T. Dinh, Nguyen H. Tran, Duy T. Ngo, Tuan Anh Le, and Phuong L. Vo. “Accelerating Federated Edge Learning”. In: *IEEE Communications Letters* 25.10 (2021), pp. 3282–3286.
- [5] Canh T. Dinh, Nguyen H. Tran, and **Tuan Dung Nguyen**. “Personalized Federated Learning with Moreau Envelopes”. In: *Advances in Neural Information Processing Systems* 33. 2020, pp. 21394–21405.

- [6] Canh T. Dinh, Nguyen H. Tran, **Tuan Dung Nguyen**, Wei Bao, Albert Y. Zomaya, and Bing B. Zhou. “Federated Learning with Proximal Stochastic Variance Reduced Gradient Algorithms”. In: *49th International Conference on Parallel Processing*. 2020, pp. 1–11.

## OTHER ACTIVITIES

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Fellow – Vietnam Education Network 2.0 (VEF) Program, 2022.

Student – Monash University International School in AI and its Applications in CS, 2021.

Student Volunteer – AAAI/ACM Conference on AI, Ethics and Society, 2021.

Student Volunteer – International AAAI Conference on Web and Social Media, 2021.

Student – Cornell, Maryland and Max Planck Pre-Doctoral Research School, 2021.

Secretary – University of Melbourne Competitive Programming Club, 2019 – 2020.

Undergraduate Representative – Melbourne University Mathematics and Statistics Society, 2019 – 2020.

Committee – University of Melbourne Internet of Things Club, 2018 – 2020.