TUAN DUNG "JOSH" NGUYEN

Department of Computer and Information Science
School of Engineering and Applied Science
University of Pennsylvania
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EDUCATION

Ph.D. in Computer and Information Science — 2023–now
University of Pennsylvania — *Philadelphia, PA, United States*
Advisor: Duncan Watts

M.Phil. in Computer Science — 2021–2023
Australian National University — *Canberra, ACT, Australia*
Advisors: Lexing Xie and Colin Klein

B.S. in Computing and Software Systems — 2018–2020
University of Melbourne — *Melbourne, VIC, Australia*
First class honours

EXPERIENCE

Visiting Student — 2024–2025
Mathematics and Computer Science Division, Argonne National Laboratory — *Lemont, IL, United States*
Collaborator: Sandeep Madireddy
Project: *Holistic Evaluation of Large Language Models in Specialized Scientific Domains*

Research Associate — 2023–2023
Research School of Astronomy, Australian National University — *Canberra, ACT, Australia*
Collaborators: Yuan-Sen Ting and Ioana Ciucă
Project: *Large Language Models for Astronomical Research*

Summer Research Scholar — 2020–2021
Computational Media Lab, Australian National University — *Canberra, ACT, Australia*
Advisor: Lexing Xie
Project: *Data-Driven Understanding of Real-Life Moral Dilemmas*

Research Intern — 2019–2020
Faculty of Engineering, University of Sydney — *Sydney, NSW, Australia*
Advisor: Nguyen Tran
Project 1: *Federated Learning with Stochastic Variance Reduced Gradient Algorithms*
Project 2: *Personalized Federated Learning with Moreau Envelopes* (Best CS Project)

Vacation Research Scholar — 2019–2019
School of Mathematics and Statistics, University of Melbourne — *Melbourne, VIC, Australia*
Advisor: Charl Ras
Project: *Analysis and Design of R-Resilient Graph Embeddings*

RESEARCH INTERESTS

Computational Social Science, Machine Learning, Natural Language Processing, Cognitive Science, Social Psychology, Network Science, Commonsense Knowledge and Intelligence, Numerical Optimization, Statistics, Practical Ethics and Artificial Intelligence for Science.

HONORS AND AWARDS

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

Google Scholar: `https://scholar.google.com/citations?user=mmy1v8oAAAAJ`

Semantic Scholar: `https://semanticscholar.org/author/Tuan-Dung-Nguyen/2116225572`

ORCID: `https://orcid.org/0000-0002-1105-005X`

[9] Anh Duc Nguyen, **Tuan Dung Nguyen**, Quang Minh Nguyen, Hoang H. Nguyen, Lam M. Nguyen, and Kim-Chuan Toh. "On Partial Optimal Transport: Revising the Infeasibility of Sinkhorn and Efficient Gradient Methods". In: *Proceedings of the AAAI Conference on Artificial Intelligence* 38.8 (2024), pp. 8090–8098. DOI: `10.1609/aaai.v38i8.28648`.

[8] Ernest Perkowski, Rui Pan, **Tuan Dung Nguyen**, Yuan-Sen Ting, Sandor Kruk, Tong Zhang, Charlie O'Neill, Maja Jablonska, Zechang Sun, Michael J. Smith, Huiling Liu, Kevin Schawinski, Kartheik Iyer, Ioana Ciucă, and UniverseTBD. "AstroLLaMA-Chat: Scaling AstroLLaMA with Conversational and Diverse Datasets". In: *Research Notes of the AAS* 8.1 (2024), p. 7. DOI: `10.3847/2515-5172/ad1abe`.

[7] **Tuan Dung Nguyen**, Ziyu Chen, Nicholas George Carroll, Alasdair Tran, Colin Klein, and Lexing Xie. "Measuring Moral Dimensions in Social Media with Mformer". In: *Proceedings of the International AAAI Conference on Web and Social Media (to appear)* 18.1 (2024). DOI: `10.48550/arXiv.2311.10219`.

[6] **Tuan Dung Nguyen**, Yuan-Sen Ting, Ioana Ciucă, Charles O'Neill, Ze-Chang Sun, Maja Jabłońska, Sandor Kruk, Ernest Perkowski, Jack Miller, Jason Jingshi Li, Josh Peek, Kartheik Iyer, Tomasz Różański, Pranav Khetarpal, Sharaf Zaman, David Brodrick, Sergio J. Rodríguez Méndez, Thang Bui, Alyssa Goodman, Alberto Accomazzi, Jill Naiman, Jesse Cranney, Kevin Schawinski, and Roberta Răileanu. "AstroLLaMA: 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. DOI: `10.48550/arXiv.2309.06126`.

[5] 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. DOI: 10.1109/TPDS.2022.3146253.

[4] **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. DOI: 10.1609/icwsm.v16i1.19327.

[3] **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. DOI: 10.1109/LCOMM.2021.3103536.

[2] 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. DOI: 10.48550/arXiv.2006.08848.

[1] 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. DOI: 10.1145/3404397.3404457.

TEACHING

COMP4650 *Document Analysis*, Australian National University, 2022. Teaching assistant.

COMP4680 *Advanced Topics in Machine Learning*, Australian National University, 2022. Teaching assistant and guest lecturer.

COMP4670 *Statistical Machine Learning*, Australian National University, 2022. Teaching assistant.

COMP5318 *Machine Learning and Data Mining*, University of Sydney, 2021. Teaching assistant.

COMP4691 *Optimisation*, Australian National University, 2021. Teaching assistant.

COMP30024 *Artificial Intelligence*, University of Melbourne, 2021. Teaching assistant.

COMP20008 *Elements of Data Processing*, University of Melbourne, 2020–2022. Teaching assistant.

OTHER ACTIVITIES

Fellow, Vietnam Education Network 2.0 (VEF) Progam, 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.

Last compiled: April 1, 2024