

Stefan Nielsen

[Website](#) | [Google Scholar](#) | stpn21@gmail.com

Research Experience

FPT Software, AI Center

Ho Chi Minh City, Vietnam

Research Resident

3/23 - 3/25

- Working in Professor [Tan Minh Nguyen](#)'s Mathematical AI lab (National University of Singapore)
- **First-author publication**, 'Elliptical Attention' [NeurIPS 2024], which proposed integrating Mahanobis distance into the attention mechanism to compute hyper-ellipsoidal attention regions, obtaining more robust and expressive attention mechanisms that outperform baseline transformers in numerous modalities.
- **First-author publication**, titled 'Tight Clusters Make Specialized Experts' [ICLR 2025], which proposed a novel sparse Mixture-of-Experts router that improved robustness, convergence speed, and overall downstream performance in language modeling and image classification tasks.

Columbia University, Data Science Institute

New York City, USA

Research Scholar

6/22 - 3/23

- Working in Professor [Talía Gillis](#)'s lab looking at machine bias and algorithmic fairness.
- Wrote and maintained codebase for 'D-Hacking' project, in which I ran simulations measuring discrepancies between in-distribution fairness evaluations and out-of-distribution fair performance for exponentiated gradient algorithms applied within logistic regression, boosted trees, and random forest classifiers.
- Wrote and maintained codebase for 'Prepayment Risk' project, in which I processed lending data from Freddie Mac / Fannie Mae and trained prepayment risk classifiers to demonstrate inequity in loan pricing.

Columbia University, Zuckerman Institute

New York City, USA

Research Assistant

9/22 - 12/22

- Working in Professor [Liam Paninski](#)'s lab in contrastive learning for spike sorting in computational neuroscience
- Setup and ran experiments evaluating SimCLR versus baseline PCA methods in terms of spike clustering performance

Publications

Tight Clusters Make Specialized Experts

Stefan Nielsen, Rachel S.Y. Teo, Laziz Abdullaev, Tan M. Nguyen
International Conference on Learning Representations (ICLR) 2025

Elliptical Attention

Stefan Nielsen, Laziz Abdullaev, Rachel S.Y. Teo, Tan M. Nguyen
Neural Information Processing Systems (NeurIPS) 2024

An Attention-based Framework for Fair Contrastive Learning

Stefan Nielsen, Tan M. Nguyen
preprint, 2023

Education

Columbia University

New York City, USA

MA in Statistics (Data Science) (Cumulative GPA: 4.02/4.00)

Courses: Neural Networks and Deep Learning, Advanced Machine Learning, Statistical Machine Learning, Nonparametric Statistics, Multivariate Statistical Inference, Elements of Data Science, Probability

University of Cambridge

Cambridge, UK

MPhil in Economics

Thesis: Failed Coalition Formation under the Nash Bargaining Solution: Using Threat Point Uncertainty to Explain Non-participation

London School of Economics

London, UK

BSc in Economics, Politics, Philosophy (First; graduated top 5 in class)

Awards / Honors

Poster Presenter, International Conference on Learning Representations (ICLR) Main Conference	2025
Huayu Enrichment Scholarship, Government of Taiwan Fully funded scholarship to live in Taiwan and take intensive mandarin classes	2024
Poster Presenter, Neural Information Processing Systems (NeurIPS) Main Conference	2024
Oral Presenter, FPT Software AI Research Symposium	2024
Funded Research Scholar, Columbia University, Data Science Institute	2022-2023

Service / Other

Reviewer

- Main conference, International Conference on Learning Representations (ICLR) 2025
- Workshop on Modularity for Collaborative, Decentralized, and Continual Deep Learning, ICLR 2025

Producer and Artist, An Việt Archives, Hackney, London

2024

- Produced *Well Settled*, a commissioned art piece by Hackney arts council drawing on the An Việt archives to explore the role of sound and its contribution to Vietnamese shared heritage in transnational contexts
- Produced 'Our Tones, Our Wrists, Our Home' with Nic Anette Miller, archiving forms of Vietnamese sign language and its role in sharing the heritage of the deaf refugee community

Languages: English (native), Vietnamese (advanced), German (intermediate)

References

Tan Minh Nguyen

Assistant Professor of Mathematics (Presidential Young Professor)

National University of Singapore

tanmn@nus.edu.sg

+65 8308 2743

Talia Gillis

Associate Professor of Law

Columbia University

gillis@law.columbia.edu

+1 (212) 854-0417