

Stefan Nielsen

Ho Chi Minh City, Vietnam | [Google Scholar](#) | stpn21@gmail.com

Research Experience

FPT Software, AI Center

Ho Chi Minh City, Vietnam

Research Resident

3/23 - present

- Working in Professor [Tan Minh Nguyen](#)'s Mathematical AI lab (National University of Singapore)
- Focus on mathematical and statistical foundations of AI models, in particular Transformers and Mixture-of-Experts
- First-author publication, titled 'Elliptical Attention', in NeurIPS main conference which proposed integrating Mahalanobis distance into the attention mechanism to compute hyper-ellipsoidal attention regions, obtaining more robust and expressive attention mechanisms that outperform baseline transformers in language modeling, image classification, image segmentation, and long-sequence modeling in clean and contaminated settings

Columbia University, Data Science Institute

New York City, USA

Research Scholar

6/22 - 3/23

- Working in Professor Talia Gillis's lab looking at machine bias and algorithmic fairness
- Focus on out-of-distribution robustness of exponentiated gradient algorithms for fair classification

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
- Focus on application of SimCLR versus baseline unsupervised and semi-supervised methods for cluster analysis

Publications and Preprints

Tight Clusters Make Specialized Experts (*under review*)

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

Fairness-aware Attention for Contrastive Learning

Stefan Nielsen, Tan M. Nguyen
preprint, 2023

Education

Columbia University

New York City, USA

MA in Statistics (Cumulative GPA: 4.0319/4.0000)

2023

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

2020

Courses: Econometric Methods, Economics of Networks, Applied Macroeconomics, Applied Microeconomics, Macroeconomics, Microeconomics

London School of Economics

London, UK

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

2019

Courses: Real Analysis, Algorithms and Programming, Principles of Econometrics, Game Theory, Macroeconomic Principles, Microeconomic Principles, Set Theory and Further Logic, Mathematical Methods, Elementary Statistical Theory

Awards / Honors

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

Reviewer, International Conference on Learning Representations (ICLR)	2025
Languages: English (native), Vietnamese (advanced), German (intermediate), Mandarin Chinese (elementary)	