

Thanh Le

Lincoln, NE — tle51@huskers.unl.edu

Website — [LinkedIn](#) — [GitHub](#)

Education

- 2022 - **PhD in Mathematics**, *University of Nebraska-Lincoln*, Lincoln, NE
Present Advisors: Xavier Pérez-Giménez and Vinodchandran Variyam
Expected May 2027
- 2022 - 2023 **M.S. in Mathematics**, *University of Nebraska-Lincoln*, Lincoln, NE
- 2018 - 2022 **B.S. in Computer Science and Mathematics**, *Fairfield University*, Fairfield, CT,
summa cum laude

Positions Held

- 2025 - **Graduate Research Assistant**, *School of Computing, University of Nebraska-Lincoln*, Lincoln, NE
Present
- Summer 2026 **Computer Vision Research Intern, Haight Intern Fellow**, *Ocuvera*, Lincoln, NE
- 2022 - 2024 **Graduate Teaching Assistant**, *Mathematics Department, University of Nebraska-Lincoln*, Lincoln, NE
- 2020 - 2021 **Software Engineer Intern**, *VietESoft JSC*, Hanoi, Vietnam

Research Interests

Theory of deep learning: transformer expressiveness and chain-of-thought computation

AI safety and alignment

Probabilistic combinatorics: random graph theory

Applied AI: computer vision

Papers and Manuscripts

Accepted Papers

- [1] **Thanh Le**, A. Pavan, and N. V. Vinodchandran. *A Tight Hierarchy for Chain of Thought*. Advances in Neural Information Processing Systems (NeurIPS), 2026. To appear.

Submitted Manuscripts

- [2] **Thanh Le**, A. Pavan, Xavier Pérez-Giménez, and N. V. Vinodchandran. *Cliques, Quasi-Cliques, and Bicliques in Random Graphs: Sampling and Algorithms*. Submitted, 2026.

Work in Preparation

- [3] Derek DeBlicke, **Thanh Le**, and Xavier Pérez-Giménez. *Hamilton cycles with a periodic pattern in random digraphs with minimum total degree at least 2*. In preparation, 2026.

Additional Research Experience

- Summer 2026 **Estimating Bed Pressure from Depth Video**
Ocuvera, Lincoln, NE.
Computer Vision Research Intern, Haight Intern Fellow
- Developed deep learning models in PyTorch to estimate bed pressure from depth images, with the goal of supporting pressure injury prevention.
 - Developed an automated bed detection and cropping pipeline to process more than 200,000 video frames.
 - Trained and evaluated convolutional neural networks and vision transformers for pressure estimation, comparing performance using mean squared error and structural similarity.
- 2021 - 2022 **EEG Memory Analysis Using Machine Learning**
Fairfield University, Fairfield, CT.
Research Assistant; supervisors: Dr. Danushka Bandara and Dr. Jessica Karanian
- Investigated machine learning methods for distinguishing true and false memories using EEG recordings from approximately 20 participants.
 - Extracted frequency and complexity features from EEG time series and trained classifiers, including random forests and naive Bayes, using scikit-learn.

Honors, Awards, and Fellowships

- 2026 **Haight Intern Fellowship**
Department of Mathematics, University of Nebraska-Lincoln.
Funding to support graduate students engaged in summer internships.
- 2024 **Lloyd Jackson Award**
Department of Mathematics, University of Nebraska-Lincoln.
Awarded to one student every year based on scholarship.
- 2023 **Outstanding Qualifying Exam Award**
Department of Mathematics, University of Nebraska-Lincoln.
- 2022 **Award for Outstanding Achievement in Mathematics**
Department of Mathematics, Fairfield University.
- 2021 **William Lowell Putnam Mathematical Competition**
Ranked 193rd out of 2,975 participants.
- 2019 **Research and Travel Grant**
Fairfield University.
Supported study abroad in Florence, Italy.
- 2017 **Third Prize, Vietnam Mathematical Olympiad**

Talks

- Jun. 2026 *Finding maximum cliques in random graphs.*
Mathematics Seminar, Fairfield University.

- Mar. 2026 *On the existence of Hamilton cycles with a periodic pattern in random digraphs with degree at least 2.*
Graduate Student Combinatorics Conference 2026, University of Illinois Chicago.
- Mar. 2026 *How does ChatGPT work under the hood? Transformer explained.*
Graduate Student Seminar, University of Nebraska-Lincoln.
- May 2025 *On the existence of Hamilton cycles with a periodic pattern in random digraphs with degree at least 2.*
Discrete Mathematics Seminar, University of Nebraska-Lincoln.
- Nov. 2024 *Thresholds in random graphs and the Kahn–Kalai conjecture.*
Discrete Mathematics Seminar, University of Nebraska-Lincoln.
- Feb. 2023 *Calculus - How and Why.*
Teaching Table, University of Nebraska-Lincoln.
- Apr. 2022 *Using Machine Learning methods to study EEG data.*
Fairfield University Research Symposium.

Conferences/Workshops Attended

- May 2026 Recent Developments in Discrete Probability, NITMB, Chicago.
- Mar. 2026 Graduate Student Combinatorics Conference 2026, University of Illinois Chicago.
- Jun. 2025 SLMath's summer school "Local Limits of Random Graphs", Paris-Saclay University.
- Apr. 2025 Lake Michigan Workshop on Combinatorics and Graph Theory, University of Illinois Chicago.
- Aug. 2024 Minicourse: Synergies of probabilistic and extremal combinatorics, VIASM, Vietnam.
- Jul. 2024 Annual Meeting, VIASM, Vietnam.
- Apr. 2024 Lake Michigan Workshop on Combinatorics and Graph Theory, Western Michigan University.
- Oct. 2023 AMS Central Sectional Meeting, Creighton University.
- Jul. 2021 Blockchain Mathematics and Computing, VIASM, Vietnam.

Teaching Experience

University of Nebraska–Lincoln

- 2023 - 2024 **Instructor of Record**
MATH 103: College Algebra and Trigonometry (Fall 2024)
MATH 101: College Algebra (Fall 2023, Spring 2024)
- 2022 - 2023 **Teaching Assistant**
MATH 107: Calculus II (recitations) (Fall 2022, Spring 2023, Summer 2023)
Led recitation sessions twice a week.

Fairfield University

- 2021 - 2022 **Teaching Assistant**
Machine Learning (Spring 2022)
Theory of Programming Languages (Fall 2021)

Outreach and Service

- 2026 **Committee Member**
AI Task Force, Mathematics Department, University of Nebraska-Lincoln.
Examine the implications of AI for mathematical research in the department.
- 2026 **Manuscript Reviewer**
Conference on Neural Information Processing Systems (NeurIPS 2026).
- 2026 **Graduate School Panelist**
Fairfield University REU.
Spoke about my experiences in mathematics graduate school.
- 2025 - 2026 **Seminar Co-organizer**
Discrete Mathematics Seminar, University of Nebraska-Lincoln.
- 2025 **Mathematics Reading Mentor**
Directed Reading Program (DRP), University of Nebraska-Lincoln.
Guided an undergraduate through readings on graph algorithms.
- 2024 - 2025 **Graduate School Mentor**
Graduate Student Mentor Program, University of Nebraska-Lincoln.
Mentored a first-year math graduate student to support their transition to graduate school.
- 2024 **Putnam Instructor**
Putnam Seminar, University of Nebraska-Lincoln.
- 2023, 2024 **Volunteer, Technical Support**
Nebraska Conference for Undergraduate Women in Mathematics (NCUWM), University of Nebraska-Lincoln.
- 2023, 2024 **Quiz Bowl Moderator**
Math Day, University of Nebraska-Lincoln.
- 2020, 2022 **Olympiad Mathematics Instructor**
Nguyen Tat Thanh High School for Gifted Students, Kon Tum, Vietnam.
Taught number theory and combinatorics for a week each year. Discussed mathematics careers, Olympiad preparation, and study abroad opportunities.
- 2021 - 2022 **Secretary and Treasurer**
Pi Mu Epsilon, Fairfield University Chapter.
- 2021 **Website Developer**
Hanoi Math Modeling Competition, Hanoi, Vietnam.
Led the development of the competition website from June to October 2021.
- 2019 **Competition Grader**
Regional MATHCOUNTS competition, Fairfield University.

Technical Skills

Programming: Python, MATLAB, Mathematica, SQL, C#, Java, Haskell, Lean
Machine learning and data analysis: PyTorch, TensorFlow, scikit-learn, pandas, Matplotlib

Methods: computer vision, image segmentation, transfer learning, Monte Carlo simulation

Other tools and frameworks: $\LaTeX$, ASP.NET Core, React

Additional Training

2026 **Quantitative Finance**

The Erdős Institute.

2025 **Neural Networks and Deep Learning**

DeepLearning.AI, via Coursera.

Languages

Vietnamese (native); English (fluent)