

ABI KOTHAPALLI

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EDUCATION

Carnegie Mellon University

Ph.D. in Machine Learning, School of Computer Science

Pittsburgh, PA

Aug. 2025 – May 2030

Vanderbilt University

M.S. in Computer Science | GPA: 4.00/4.00

Nashville, TN

Aug. 2023 – May 2025

Thesis: Computational Optimal Transport for Learning from Geometrically Structured Data [\[Link\]](#)

Advisor: Soheil Kolouri

Vanderbilt University

B.S. in Computer Science (*Honors*) & Mathematics (*Highest Honors*) | GPA: 4.00/4.00

Nashville, TN

Aug. 2021 – May 2025

Minors: Physics, Scientific Computing

RESEARCH EXPERIENCE

Department of Mathematics, Vanderbilt University

Nashville, TN

Undergraduate Research Assistant | Mentors: Dr. Rocío Díaz Martín, Dr. Akram Aldroubi

May 2024 – Present

- Studied multi-stage optimal transport (OT), a generalization of classical OT involving multiple stages of transport.
- Presented preliminary results at the *Joint Mathematics Meetings (JMM) 2025* in Seattle, WA.
- Received highest honors on senior thesis in mathematics, which is currently in preparation for publication [\[1\]](#).

Machine Intelligence and Neural Technologies (MINT) Lab, Vanderbilt University

Nashville, TN

Undergraduate Research Assistant | Mentor: Dr. Soheil Kolouri

Dec. 2022 – Present

- Studying extensions of the Gromov-Wasserstein problem for metric measure spaces in the partial transport [\[2\]](#) and linearized partial transport settings [\[3\]](#). Presenting author at *ICLR 2025* in Singapore.
- Developed computational OT method to compare spherical distributions based on the stereographic projection mapping and the generalized Radon transform [\[4\]](#). Presenting author at *ICML 2024* in Vienna, Austria.
- Investigated performance tradeoffs between varying complexities in different components of permutation-invariant point cloud classification architectures [\[5\]](#). Presenting author at *ICML 2024 GRaM Workshop* in Vienna, Austria.

Institute for Software Integrated Systems (ISIS), Vanderbilt University

Nashville, TN

Undergraduate Research Assistant | Mentor: Dr. Xenofon Koutsoukos

Dec. 2021 – Dec. 2023

- Studied the minimum dominating set (MDS) problem, an NP-hard combinatorial optimization problem on graphs.
- Developed novel heuristic algorithm to approximate MDS solutions using graph convolutional networks [\[6\]](#).

PREPRINTS & PUBLICATIONS

(*) indicates equal contribution

- [1] **Abihith Kothapalli**. Multi-Stage Optimal Transport. *In Preparation*, 2025. [\[Link\]](#)
- [2] Yikun Bai, Rocío Díaz Martín*, **Abihith Kothapalli***, Hengrong Du, Xinran Liu, and Soheil Kolouri. Partial Gromov-Wasserstein Metric. *International Conference on Learning Representations (ICLR)*, 2025. [\[ArXiv\]](#)
- [3] Yikun Bai, **Abihith Kothapalli***, Hengrong Du*, Rocío Díaz Martín*, and Soheil Kolouri. Linear Partial Gromov-Wasserstein Embedding. *International Conference on Learning Representations (ICLR)*, 2025. [\[ArXiv\]](#)
- [4] Huy Tran*, Yikun Bai*, **Abihith Kothapalli***, Ashkan Shahbazi, Xinran Liu, Rocío Díaz Martín, and Soheil Kolouri. Stereographic Spherical Sliced Wasserstein Distances. *International Conference on Machine Learning (ICML) (Spotlight, Top 3.50%)*, 2024. [\[ArXiv\]](#), [Website](#)
- [5] **Abihith Kothapalli**, Ashkan Shahbazi, Xinran Liu, Robert Sheng, and Soheil Kolouri. Equivariant vs. Invariant Layers: A Comparison of Backbone and Pooling for Point Cloud Classification. *International Conference on Machine Learning (ICML) Geometry-grounded Representation Learning and Generative Modeling (GRaM) Workshop*, 2024. [\[ArXiv\]](#)
- [6] **Abihith Kothapalli**, Mudassir Shabbir, and Xenofon Koutsoukos. Learning-Based Heuristic for Combinatorial Optimization of the Minimum Dominating Set Problem using Graph Convolutional Networks. *Under Review at Neurocomputing*, 2023. [\[ArXiv\]](#)
- [7] **Abihith Kothapalli**, Hinrich Staecker, and Adam Mellott. Supervised machine learning for automated classification of human Wharton's Jelly cells and mechanosensory hair cells. *PLOS ONE*, 16(1):1–11, 2021.

HONORS & AWARDS

Vanderbilt School of Engineering Commencement Banner Bearer

Apr. 2025

Richard J. Larsen Award, Vanderbilt Department of Mathematics (Top Graduating Mathematics Major)

Apr. 2025

Computing Research Association (CRA) Outstanding Undergraduate Researcher Award Finalist

Dec. 2024

Vanderbilt Top 20 Outstanding Senior Award

Oct. 2024

International Conference on Machine Learning (ICML) Spotlight (Top 3.50% of Submissions)

Jul. 2024

ICPC North American Championship Finalist & Honorable Mention (Regional Gold Medalist)

May 2024

Vanderbilt Data Science Institute Summer Research Fellow (\$6,000)

Apr. 2024

Young Researcher at the 11th Heidelberg Laureate Forum (1 of 200 Selected Globally)

Apr. 2024

Vanderbilt Undergraduate Research Fair Two-Time Best Poster Award

Nov. 2023, Apr. 2024

Putnam Mathematical Competition Top 500

Feb. 2023

Cornelius Vanderbilt Scholarship (Full-Tuition Merit Scholarship; ~\$250,000)

2021-2025

WORK EXPERIENCE

Susquehanna International Group (SIG)

Philadelphia, PA

Quantitative Trading Intern

Jun. 2023 – Aug. 2023

- Intern on the Algorithmic Prediction and Execution desk. Learned about execution and high-frequency trading strategies, including both development and maintenance.
- Developed novel trading strategy using large language models (LLMs) to parse SEC filings in real-time and automatically make trades. Demonstrated profitability of model in backtesting.
- Completed options education and market-making program, and competed in mock trading.

Meta Platforms

Menlo Park, CA

Software Engineering Intern

May 2022 – Aug. 2022

- Intern on Ads ML Automation team. Developed reliability monitoring system for Meta's release blueprint platform, an internal ML infra tool to automate production release of trained ads ranking models across Meta products.
- Built automated testing platform to monitor end-to-end release blueprint pipeline – including recurring training, model evaluation, and launch – for over 140 model types used across platforms including Instagram, Facebook, and WhatsApp.
- Identified and corrected failures, increasing blueprint success rate from $\sim 70\%$ to $> 90\%$, drastically improving reliability.

TEACHING EXPERIENCE

Group Recitation Tutor, Vanderbilt School of Engineering

F23, S24, F24, S25

MATH 1300: Calculus I, MATH 1301: Calculus II, MATH 2420: Differential Equations

Teaching Assistant, Vanderbilt Department of Computer Science

S24, F24

CS 4262: Foundations of Machine Learning

Teaching Assistant, Vanderbilt Department of Mathematics

S23, F23

MATH 2820: Probability & Mathematical Statistics

Teaching Assistant, Vanderbilt Department of Computer Science

F22

CS 2201: Data Structures

CAMPUS INVOLVEMENT

Change++ | *Vice President, Senior Mentor*

Oct. 2021 – Present

- Registered 501(c)(3) nonprofit that partners with nonprofits globally with the mission of building impactful technology.
- Lead efforts to recruit new engineering managers, product managers, software developers, and UI/UX designers.
- Organize events such as coding workshops, mini-hackathons, resume workshops, faculty mixers, and nonprofit/startup fairs that promote professional development across campus.

VandyHacks | *Executive Board Member, Senior Advisor*

Jan. 2022 – Present

- Executive board member on both the development and operations committees of VandyHacks, a student-run hackathon representing one of the largest engineering events at Vanderbilt.
- Organize logistics for the hackathon such as transportation, food, workshops, project presentation/judging, and recruitment.
- Develop technical infrastructure such as the public website/application portal and hacker management and judging systems.

Pi Mu Epsilon | *President*

Nov. 2022 – Present

- Lead recruitment efforts and host events to promote participation in math competitions, conferences, and research.

Tau Beta Pi | *President*

Oct. 2023 – Present

- Run chapter operations and organize events including induction, faculty mixers, and career/internship panels.

Vanderbilt CTF Club | *Competitor*

Aug. 2022 – Present

- Compete in CTF (capture the flag) competitions throughout the year, specializing in competitive programming and algorithmic design questions. Ranked both nationally and internationally as a team.
- Post write-ups for challenges solved during competitions in order to discuss solutions with the broader CTF community.

Code Ignite | *Team Lead & Curriculum Developer*

Sep. 2021 – May 2023

- Developed a 6-week Python programming curriculum for middle school students with no prior coding experience.
- Led a team of two other Vanderbilt students to teach the curriculum at a local Nashville middle school, fostering early exposure to coding and computational thinking.

Vanderbilt Student Volunteers for Science | *Volunteer Instructor*

Oct. 2021 – Mar. 2023

- Taught hands-on science lessons to middle school students in the Metro Nashville area, fostering interest in STEM through interactive experiments and demonstrations.

BhangraDores | *Competitor*

Sep. 2021 – May 2022

- Contributed to performances as part of Vanderbilt's competitive bhangra dance team, showcasing traditional Punjabi folk dance at cultural events/showcases and competitions.

SELECTED COURSEWORK

Mathematics: (Graduate) Real Analysis I & II, Topology I & II, Modern Algebra I & II, Functional Analysis, Harmonic Analysis, Operator Algebras, Number Theory Seminar (Modular Forms). **(Undergraduate)** Probability & Mathematical Statistics, Advanced Linear Algebra, Complex Analysis.

Computer Science: (Graduate) Statistical Foundations of Deep Learning, Advanced Machine Learning, Extended Mathematical Programming, Design & Analysis of Algorithms. **(Undergraduate)** Foundations of Machine Learning, Artificial Intelligence, Operating Systems, Programming Languages