

NALINPAT PONOI

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SUMMARY

Recent Ph.D. graduate in Mathematics with a strong research background in spectral graph theory, homology theory, and topological data analysis (TDA). Complementing my research, I offer 8 years of extensive experience as a mathematics lecturer, specializing in Calculus, advanced undergraduate mathematics, and comprehensive preparation for university admissions exams.

EDUCATION

Doctor of Philosophy of Mathematics **August 2020 - July 2026**

Department of Mathematics and Computer Science, Chulalongkorn University, Bangkok, Thailand

- Thesis on "The k-Laplacian Matrix on Simplicial Complexes with Applications in Kernel-based Classification"

Master of Science of Data Science and Analytics **July 2023 - April 2025**

KMITL Digital Analytics and Intelligence Center, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand

- Independent Study on "Persistent Homology Method of Road Network Connectivity Conditioned by Waterway Proximity for Flood Management in Bangkok" (Outstanding)

Master of Science of Mathematics **August 2018 - July 2020**

Department of Mathematics and Computer Science, Chulalongkorn University, Bangkok, Thailand

- Thesis on "Normalized Hodge Laplacian Matrix and Its Spectrum"

Bachelor of Science of Mathematics (First-Class Honors) **August 2014 - July 2018**

Department of Mathematics and Statistics, Prince of Songkla University , Songkhla, Thailand

- Thesis on "The Normalized Laplacian Eigenvalues of One-Point Union of Paths"

RESEARCH EXPERIENCE

REU Program **April 2017 - August 2017**

Rutgers Computer Science Department, Rutgers University–New Brunswick, NJ, USA

- Research on "Quantum Cohomology Rings Generated by Gromov-Witten Invariants"

Summer Research **April 2016 - August 2016**

Department of Mathematics, Sungkyunkwan University, Suwon, South Korea

- Research on "Spectral Graph Theory"

PUBLICATION AND CONFERENCE

- Ponoi, N., Montagantirud, P. ***Normalized Hodge Laplacian Matrix and Application to Random Walk on Simplicial Complexes***. Graph. Comb. 40, 4 (2024). DOI: doi.org/10.1007/s00373-024-02791-8
- Ponoi, N., Montagantirud, P. k**-Laplacian Centrality for Simplicial Complexes**. Journal of Complex Networks, 14, 2 (2026). DOI: doi.org/10.1093/comnet/cnag012
- Speaker at Annual Pure and Applied Mathematics Conference 2020 for the topic '***Normalized Hodge Laplacian Matrix***', June 2020
- Speaker at The 13th Conference on Science and Technology for Youths for the topic '***The Normalized Laplacian Eigenvalues of One-Point Union of Paths***', July 2018 (*Best Oral Presentation Award*)

WORK EXPERIENCE

Mathematics Lecturer, Warwick Institute **May 2023 - Present**

- Taught mathematics to international high school students, with a focus on preparing them for standardized tests such as SAT MATH, IGCSE, and GED

Mathematics Content Creator, Prepfilx **July 2022 - September 2022**

- Developed and created a 30-hour online Calculus I course for the Prepfilx platform

Mathematics Content Creator, Robokru **June 2021 - December 2021**

- Designed mathematics exams for high school students (M.1-M.6) based on the official Thai curriculum