Giovani Thai

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http://giothai.github.io

Education

California Polytechnic State University — San Luis Obispo, CA
M.S. in Mathematics (Applied Math Specialization) — *(expected)* June 2025
- GPA: 3.77 / 4.00

California Polytechnic State University — San Luis Obispo, CA
B.S. in Mathematics (Applied Math Concentration) — June 2023
- Minors in Statistics, Anthropology & Geography
- GPA: 3.53 / 4.00
- 7-time Dean's List

Research Interests

Applied mathematics; specifically, the intersection between mathematics and biological, ecological, or social systems. Discrete models on social networks, or continuous models with SIR-adjacent framework.

Papers

Gross, L., Stewart, A., **Thai, G.**, Paquin, D. (2024) *Numerical Analysis of Critical Values for Remission During Imatinib Treatment of Chronic Myelogenous Leukemia.* In revision.

Tully-Doyle, R., Adlin, L., **Thai, G.**, Tiscareno, S. (2023) *Pick Functions as Cauchy Transforms of Colored Graphs.* Preprint. https://arxiv.org/abs/2410.10695.

Posters and Presentations

Paquin, D., Gross, L., Stewart, A., **Thai, G.** (2024) *Mathematically Modeling Chronic Myelogenous Leukemia.* Upcoming talk in Jan 2025 at the Joint Mathematics Meetings in Seattle, WA.

Tully-Doyle, R., Adlin, L., **Thai, G.**, Tiscareno, S. (2023) *Graph Theoretic Interpretations of the Nevanlinna Representation.* Poster presented in Jan 2024 in the PME Poster Session, at the Joint Mathematics Meetings in San Francisco, CA.

Tully-Doyle, R., Adlin, L., **Thai, G.**, Tiscareno, S. (2023) *Graph Theoretic Interpretations of the Nevanlinna Representation.* Talk given in Nov 2023 at the 2^{nd} CSU Mathematical Sciences Conference in Bakersfield, CA.

Lin, J., Ellwein, S., **Thai, G.** (2023) *Using Machine Learning to Improve Treatment Targeting in Farmer Training.* Poster presented in June 2023 at the Cal Poly Beacon Research Symposium in San Luis Obispo, CA.

Liese, J., Klig, C., Lane, R., Moscot, M., **Thai, G.** (2022) *Characterizing Singular Graphs with Games.* Poster presented in June 2023 at the Cal Poly Bailey College Student Research Conference in San Luis Obispo, CA.

Liese, J., Klig, C., Lane, R., Moscot, M., **Thai, G.** (2022) *Characterizing Singular Graphs with Games.* Talk given in Nov 2022 at the 1^{st} CSU Mathematical Sciences Conference in Northridge, CA.

Teaching Experience

Graduate Teaching Associate — Instructor of Record — MATH 118, 119
California Polytechnic State Univeristy, San Luis Obispo — Jan 2024 - June 2024
- Created lecture material, in-class worksheets, quizzes and exams for a 35-student class each academic quarter, across two quarters
- Graded weekly homework assignments/assessments, held office hours twice a week
- Attended Graduate Teaching Seminar to discuss best teaching practices

Instructional Student Assistant — MATH 476
California Polytechnic State Univeristy, San Luis Obispo — Apr 2023 - June 2023

Research Experience

Graduate Research Assistant — Supervisor: Dana Paquin
Mathematically Modeling Chronic Myelogenous Leukemia June 2024 - Present

- Developed MATLAB scripts to simulate system of delay-differential equations and find time to remission, minimum cancer/maximum T-cell concentration
- Constructing goodness-of-fit metric comparing simulated T-cell curve to patient data
- Co-authoring a paper on a parameter analysis of the DDE model under continuous treatment and treatment interruptions

Undergraduate Research Assistant — Supervisor: Ryan Tully-Doyle
Graph Theoretic Interpretations of the Nevanlinna Representation June 2023 - Sep 2023

- Coded Mathematica functions to generate graph products, adjacency matrices and representing functions to keep track of possible paths
- Proved two-variable representing function results for graphs joined at common vertex

Undergraduate Senior Project — Advisor: Elena Dimitrova
Exploring Community Structure in Online Discourse with Python Apr 2023 - Sep 2023

- Constructed mention-based network from vaccination-related tweets with NetworkX
- Ran Louvain algorithm and calculated degree centrality across communities
- Used sentiment analyzer from nltk library in Python to quantify and compare tweet sentiment within communities

Undergraduate Research Assistant — Supervisor: Joyce Lin
Using Machine Learning to Improve Targeting for Farmer Training Jan 2023 - June 2023

- Used Pandas and NumPy libraries in Python to clean Cambodian survey data (baseline and endline), construct income features

Undergraduate Research Assistant — Supervisor: Jeffrey Liese
Characterizing Non-Singular Graphs with Games June 2022 - Sep 2022

- Generated graphs, adjacency matrices, optimal strategy vectors using Mathematica
- Proved non-singularity for four graph families by partitioning vertices, finding optimal strategy on adjacency matrix game

Awards and Honors

Graduate Assistant Fellowship Sep 2024

– Awarded to fund master's thesis in collaboration with math faculty member.

Frost Undergraduate Research Fund June 2024/2023/2022

– Awarded to fund summer research projects in collaboration with mathematics faculty.

Edward van Duyne Scholarship June 2024

– Awarded to all class levels of Mathematics students with minimum 3.0 GPA.

Cal Poly Beacon Research Grant Jan 2023

– Awarded to underrepresented students to fund research projects with faculty member.

Software

Programming: `Python, MATLAB, Mathematica, R`
Python Libraries: Pandas, Numpy, Matplotlib, NetworkX
Typesetting: LaTeX (Beamer, TikZ)