

DUONG TRAN

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Github: <https://github.com/tdkduong>

EDUCATION

Michigan State University

B.S in Computer Science.

Additional Major: Advanced Mathematics.

01/2021 - 05/2025

Major GPA: 3.74/4.0

Major GPA: 3.78/4.0

RESEARCH INTERESTS

Graph Theory, Enumerative Combinatorics, Partition Theory, Theoretical Computer Science and Data Structure & Algorithm.

RESEARCH EXPERIENCE

Undergraduate Thesis

Advisors: Prof. Leonid Chekhov

East Lansing, MI

05/2024 - 12/2024

- Title: Fundamental about Ramsey Numbers, Ramsey Theory and Their Combinatorial Significance
- Comprehended exposition on finite and multicolor Ramsey numbers in graph theory, explored applications in graph theory, number theory and theoretical computer science.
- Covered known values, bounds, and computational approaches; reconstructed classical proofs and illustrations of open problems in asymptotic behavior and multicolor generalizations.
- Authored an article as undergraduate thesis, and have a talk about this topic for the professors.

Research Assistant

Advisors: Prof. Leonid Chekhov

East Lansing, MI

05/2024 - 12/2024

- Title: Random Matrix Model
- Studied about matrix model from professor's book "Matrix Model: Integrability and Topology" and give weekly presentations on each sections.
- Authored expository articles on Virasoro Constraints and Kontsevich matrix model.

Research Assistant

Advisors: Prof. Peter Magyar

East Lansing, MI

05/2024 - 12/2024

- Title: Partition Lattice q-Analog
- Studied about q-analog from Stanley's book "Enumerative Combinatorics Vol. I" and some of the papers about q-analog and gave weekly presentations on each sections.
- Constructed some formulas for the q-analog of twelvefold-way formulas, reconstructed q-analog version of some posets, and summarize those in a self-written article.
- Authored an article on some q-analog numbers such as q-Stirling numbers, q-Bernoulli numbers; and show its properties.

Research Assistant - Discover America Project

Advisors: Prof. Jianliang Qian

East Lansing, MI

09/2023 - 05/2024

- Title: Towards High-resolution Computerized Traveltime Tomography Based on Eikonal Solvers
- Developed and implemented solvers for both first order and high order for Eikonal equations used in Computerized Traveltime Tomography.
- Created better reconstruction of the original images after using optimized algorithms in Computerized Traveltime Tomography.

RELEVANT COURSES

Grad. Graph Theory (audit)

Textbooks used: Modern Graph Theory, Bollobas

Grad. Algorithmic Graph Theory

Textbooks used: Graph Theory, Bondy & Murty

Grad. Combinatorics I

Textbooks used: Enumerative Combinatorics, Vol. I, Stanley

Honors Abstract Algebra I & II

Textbooks used: Algebra, Artin & Topics in Algebra, Herstein

Honors Real Analysis I & II

Textbooks used: Net based approached to analysis

TEACHING EXPERIENCE

Mathematics Private Tutor

Self-employed

Hanoi, Vietnam - online

06/2019 - Present

- Provided Mathematics classes for 20+ students, focusing on Mathematics entry exam for high school for gifted students
 - Around 800 gifted students participated in the exam, and only about 100 qualified.
 - The topics covered for the exam included equations, inequalities, number theory, Euclidean geometry, and discrete math.
- Built teaching curriculum, delivered tutorials in person or online three times a week, and trained students with examination techniques.

Competitive Programming Private Tutor

Self-employed

Hanoi, Vietnam - online

06/2019 - Present

- Provided Algorithms tutoring services for 15+ students, focusing on Algorithms for students who want to compete in the National Olympiad and higher. The topics covered for the competition include Dynamic Programming, Data Structures and Graph Theory.
- Built teaching curriculum, delivered tutorials in person or online twice a week, and trained students with created contests as the real one.

Teaching Assistant

Michigan State University

East Lansing, MI

09/2021 - 12/2024

- Teaching Assistant Classes:
 - CSE 332: Introduction to Programming II - Prof. J. Nahum - Teaching Assistants are chosen from the top 5% of the applied students. Number of students in semesters: Fall 2021 (73 students), Spring 2022 (68 students), Fall 2022 (80 students), Spring 2023 (74 students)
 - MTH 132: Calculus I - Prof. A. Drachman: Number of students in semesters: Fall 2023 (68 students), Spring 2024 (62 students), Fall 2024 (60 students).
- Assist students from diverse educational backgrounds, host recitation lessons, lab lessons. Facilitate group discussions, hold weekly in-person and online help rooms, answer student inquiries, grade weekly quizzes, midterm, and final examinations.

SCHOLARSHIPS & AWARDS

Best Presentation Award

21st MSU Student Mathematics Conference

2024

Second Prize

Herzog Competition - An annual Mathematics Competition at Michigan State University.

2022

Top 25

ICPC ECNA Round

2021 - 2024

EXTRACURRICULAR EXPERIENCE

Active Member

Michigan State University ICPC Team

East Lansing, MI

09/2021 - 05/2025

- Present new topics biweekly for multiple Michigan State University ICPC Teams
- Host weekly Programming Contest as a training for multiple Michigan State University ICPC Teams