

Chutchawon Weeranukunjit

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Research Interests

Graph Theory; Extremal Functions; Combinatorics; Game Theory; Data Analysis.

Education

Ph.D. in Mathematics, Mahidol University

2021–2026

Thesis Topic: Analysis of Saving Sets and Surviving Rates in the Firefighter Problem with Edge Subdivision on Graphs of Maximum Degree 3 and Full-Array Trees.

Advisor: *Asst. Prof. Dr.Chanun Lewchalermvongs.*

M.SC. in Mathematics, Mahidol University

2018–2020

Thesis Topic: A Study of the Firefighter Problem with Subdividing Edges.

Advisor: *Asst. Prof. Dr.Chanun Lewchalermvongs.*

B.SC. in Mathematics, Mahidol University

2014–2017

Thesis Topic: Domination Game Played on a Graph Constructed from 1-Sum of Paths.

Advisor: *Asst. Prof. Dr.Chanun Lewchalermvongs.*

Research Experience

Research Assistant

2024–Present

Enhancing Public Transport Routing to Minimize PM2.5 Exposure in Bangkok. Funded by the Thailand-UK PACT (Partnering for Accelerated Climate Transitions) program.

Supervisor: *Asst. Prof. Dr.Chanun Lewchalermvongs.*

Visiting Researcher, National University of Singapore (NUS)

Jan–Jun 2025

Conducted short-term research in extremal graph theory; extended analysis of the extremal function $\delta_E(t)$; collaborated with researchers at NUS.

Supervisor: *Asst. Prof. Dr.Tran Chieuh Minh.*

Research Assistant

2021–2022

Analysis of a Public Transportation Network in the PM2.5 Crisis of Bangkok: A Game-Theoretical Approach. Funded by the Fundamental Fund, Basic Research Fund category, under the sub-program: Knowledge Creation at Mahidol University, supported by the Thailand Science Research and Innovation (TSRI).

Supervisor: *Asst. Prof. Dr.Chanun Lewchalermvongs.*

Publications & Preprints

1. **C. Weeranukunjit & C. Lewchalermvongs. Analysis of Saving Sets and Surviving Rates in the Firefighter Problem with Edge Subdivision on Graphs of Maximum Degree 3 and Full- k -Array Trees.** *ICIC Express Letters, Part B: Applications (ICIC-ELB)*, Vol.20, No.4, pp.373-380, 2026.
2. **C. Weeranukunjit & C. Lewchalermvongs. Maximizing Vertex Rescue: Investigating the Firefighter Problem with Edge Subdivision.** *AKCE International Journal of Graphs and Combinatorics*, 22(1), pp. 85–90, 2024.
3. C. Lewchalermvongs, P. Lewchalermvongs, C. Chuesuphan, **C. Weeranukunjit**, C. Boonkangwan, M. Chaikittiporn, P. Srikinth & T. Glinpatgij. **A game-theoretic approach for route planning on traveling by public transportation in the PM2.5 pollution:**

A case study in Bangkok. *Transportation Research Interdisciplinary Perspectives*, 27, 2024.

4. **C. Weeranukunjit**, C. Lewchalermvongs & T. Thanatipanonda. **The firefighter problem with subdividing edges on graphs of maximum degree three.** In *Proceedings of the International Conference in Mathematics and Applications (ICMA-MU 2020)*, pp. 191–198, 2020.
5. **C. Weeranukunjit** & C. Lewchalermvongs. **Domination Game Played on a Graph Constructed from 1-Sum of Paths.** *Thai Journal of Mathematics (Special Issue: Annual Meeting in Mathematics 2018)*, pp. 34–45, 2019.

Conferences & Presentations

1. **C. Weeranukunjit** & C. Lewchalermvongs. *A Variation on the Firefighter problem with edge subdivision.* Presented at the **International Conference on Innovative Computing, Information and Control 2025 (ICICIC 2025)**, Kitakyushu, Japan, Aug 2025.
2. **C. Weeranukunjit**, C. Lewchalermvongs & T. Thanatipanonda. *The firefighter problem with subdividing edges on graphs of maximum degree three.* Presented at the **International Conference in Mathematics and Applications 2020 (ICMA-MU 2020)**.
3. **C. Weeranukunjit** & C. Lewchalermvongs. *Domination Game Played on a Graph Constructed from 1-Sum of Paths.* Presented at the **23rd Annual Meeting in Mathematics 2018 (AMM 2018)**, Mandarin Hotel, Bangkok, May 2018.

Awards & Scholarships

- Development and Promotion of Science and Technology Talent Project Scholarship (*DPST*) 2014-2026

Skills

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| • Programming: Python, SQL | • Mathematical: Graph Theory, Extremal Functions, Combinatorics & Game Theory |
| • Typesetting: $\text{\LaTeX}$ | • Languages: English & Thai |

Professional Service & Outreach

- Self-directed online coursework in Data Science, focusing on data analysis and visualization using Google Sheets, SQL, and Python (offered by Google).