



DOUNGPORN “SAM” WIWATANAPATAPHEE

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Sessional academic in Mathematics and Statistics with a strong foundation in Data Science, Actuarial Science, and Applied Mathematics. Completed a PhD in Financial Modelling and Energy Optimisation, with research spanning fractional differential equations, space-time modelling, and blockchain-based smart grid systems. Skilled in data-driven optimisation using R, Python, and MATLAB. Research interests include Big Data Analytics for Smart Grids, Multifractal Models in Finance, and AI-based Risk Management under market uncertainty. Committed to interdisciplinary innovation at the intersection of mathematical modelling, simulation, and intelligent systems.

WORK EXPERIENCE

July 2023 –	Sessional Academic	Curtin University – Mathematics & Statistics Discipline
	I have taught nine undergraduate courses in mathematics, statistics, finance, and data science. My teaching integrates mathematical and statistical methods with computational and AI techniques to address real-world problems.	
	Subject	Role
2024 –	Economics Designed and delivered curriculum, focusing on micro/macro concepts and policy modelling. Led lectures, coordinated assessments, and incorporated business strategy applications for international cohorts.	Lecturer
2025 –	Supply Chain Modelling and Optimisation Coordinated and taught the unit for international students, integrating forecasting, logistics optimisation, and stochastic models with applications in industries.	Lecturer
	Introduction to Scientific Data Analysis Delivered lab sessions and guided student projects in Scientific Data Analysis, using R and Excel to teach foundational statistical and data visualisation skills.	TA (Computer lab)
	Introduction to Probability and Data Analysis Facilitated practical sessions in Probability & Data Analysis, with emphasis on statistical inference and probability distributions.	TA (Computer lab)
2024	Financial Engineering 1 Delivered tutorials by supporting students' understanding of asset pricing, stochastic models, portfolio construction, and risk-neutral valuation.	TA (Tutorial)
	Accelerated Mathematics for Engineers Conducted problem-solving workshops on calculus and linear algebra. Tailored teaching for engineering students with varied math backgrounds.	TA (Workshop)
	Calculus for Engineers Led MATLAB-based tutorials for Calculus for Engineers, guiding students through differential equations and optimisation techniques.	TA (Computer lab)
	Linear Algebra and Statistics for Engineers Facilitated R and MATLAB-based lab, covering data analysis and statistical inference with engineering applications	TA (Computer lab)
2023	Foundations of Calculus Led interactive workshops in Foundations of Calculus, developing core knowledge in differentiation and integration, while mentoring 1st-year students through core math problems.	TA (Workshop)
Feb – Nov 2018	Research Assistant	Curtin University – Mathematics & Statistics Discipline
	Conducted applied mathematical modelling using Finite Element Methods to assess bridge structural stability, contributing to a published paper in 2019.	
Dec 18 – Feb 19	Intern Researcher	Thanachart Insurance PCL
	<ul style="list-style-type: none">Applied statistical modelling techniques to analyse customer retention and renewal patterns in motor insurance. Conducted risk analysis and evaluated loss ratios, integrating actuarial principles to guide business decision-making.Created dynamic Tableau dashboards to visualise key performance indicators, supporting strategic insights for underwriting, claims analysis, and executive reporting.	

EDUCATION

October 2025	PhD in Mathematics and Statistics Research Training Program (RTP) Scholarship Recipient Thesis title: Blockchain-based Renewable Energy Trading and Storage Optimisation	Curtin University
2021	Master of Data Science with Distinction	The University of Western Australia
2018	Bachelor of Science (Actuarial Science)	Curtin University

CERTIFICATIONS & QUALIFICATIONS

2018 - 2021	Foundation program CT1 Financial Mathematics; CB1 Business Finance; CS1 Actuarial Statistics; CB2 Business Economics; CM2 Financial Engineering and Loss Reserving	Actuaries Institute Australia Membership since 2018
2025	MATLAB Onramp	MathWorks
2024	AI Intensive Bootcamp	VP Akkodis Academy Australia
2020	Python Essential Training	LinkedIn
2018	Statistical Tools for Risk Modelling	Thammasat University

SKILLS

Analytical Tools		
•	Mathematical & Statistical Modelling	ANSYS, MATLAB, Python, R
•	Actuarial Modelling	Time series forecasting, stochastic processes, risk modelling
•	Data Analytics	Tableau, Excel (VBA), SQL
•	Insurance Analytics	Loss modelling, customer retention analysis, KPI dashboards
•	Simulation & Optimisation	Monte Carlo simulation, supply chain modelling
Teaching & Educational Skills		
•	Curriculum Design	Developed and coordinated units in economics and optimisation
•	Assessment & Student Engagement	Delivered tutorials and workshops; mentored students in applied projects
•	Learning Platforms	LMS tools (Blackboard, Moodle)
•	Education Theory	Familiar with contemporary pedagogy in quantitative and actuarial education
Web & Technical Development		
•	HTML, CSS, JavaScript	
•	Git, Shell, Unix/Linux environments	
•	LaTeX & Scientific Writing	

RESEARCH INTEREST

- ML for Predictive Maintenance in Sustainable Wind and Solar Systems
- Multifractal Models for Financial Time Series
- Optimisation of Battery Storage Systems using Big Data from Smart Grids
- AI-Based Financial Risk Management under Market Volatility

PUBLICATIONS

2019	Wiwatanapatapee, D., Khajohnsaksumeth, N. & Wu, Y.H. Effect of beam joinery on bridge structural stability . Adv Differ Equ 2019, 225 (2019). doi: 10.1186/s13662-019-2158-5
2025	Wiwatanapatapee, D., Wu, Y., Sawangtong, W. & Sawangtong, P. Modeling Anomalous Diffusion and Volatility in the Australian National Electricity Market Using a Space-Fractional Black-Scholes Framework [J]. AIMS Mathematics, 2025, 10(5): 12388-12420. doi: 10.3934/math.2025560
2025 (In press)	Sawangtong, W., Wiwatanapatapee, D. & Sawangtong, P. Analytical Solution of Space-Fractional Black-Scholes Equation for European Put Option via Extended Caputo Derivative .

CONFERENCES

2 - 6 Feb 2025	Gave a talk on the topic of “ Fractional Black-Scholes Model for Pricing Derivatives in the Australian Electricity Market ” at the ANZIAM 2025 Conference, Pacific Bay Resort, Coffs Harbour, NSW.
16 - 18 Dec 2018	Gave a talk on the topic of “ Effect of beam joinery on bridge structural stability ” at ICMA-MU 2018: The 2018 International Conference in Mathematics and Applications, The Century Park Hotel, Bangkok, Thailand.