

Richard Cornelius Suwandi

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Research Overview

My research develops adaptive intelligence for scientific discovery and engineering design. I study how AI systems can learn probabilistic models of unknown environments, select informative experiments under limited budgets, and revise their hypotheses from feedback. My work advances the foundations of Bayesian optimization through scalable surrogate training, robust and high-dimensional decision-making, adaptive surrogate design, and AI-driven discovery of new algorithms, and increasingly extends into agentic and autoresearch systems that adapt their own model and experiment design in closed loop.

Education

The Chinese University of Hong Kong, Shenzhen (CUHK-Shenzhen) *Sep 2023 – May 2027*
PhD in Computer and Information Engineering *(Expected)*

- **Supervisors:** [Prof. Feng Yin](#) & [Prof. Tsung-Hui Chang](#) (IEEE Fellow)

The Chinese University of Hong Kong, Shenzhen (CUHK-Shenzhen) *Sep 2019 – May 2023*
BSc in Statistics (Data Science Stream), First-Class Honours

Research Experience

ByteDance (Douyin), Creation & Music Recommendation Team *Apr 2026 – Jul 2026*
Research Intern, Shenzhen

- Selected for ByteDance's Jindouyun Talent Program (ByteIntern track), a selective recruiting program for high-potential technical talent
- Conduct research on generative recommendation and LLM4Rec, developing foundation-model-based approaches for large-scale content recommendation
- Explore AIGC-powered content creation and recommendation, with a focus on personalized content generation, distribution, and discovery

Dria *Sep 2025 – Feb 2026*
Research Intern, New York (Remote)

- Conduct research on evolutionary coding agents for algorithm discovery and codebase optimization
- Helped develop [Kai](#) , an evolutionary coding agent for automatically finding and patching software vulnerabilities, deployed as a CLI, local web UI, and chat-platform integrations (Slack, Discord, Telegram, email), with cloud-sandboxed execution (E2B/Vercel) for remote runs

Huawei *Mar 2025 – Jul 2025*
Research Intern, Shenzhen

- Conduct research on advanced signal processing algorithms for robust network optimization in 5G systems
- Develop a black-box constrained optimization algorithm to adaptively optimize key network parameters

Bayesian Learning for Signal Processing (BLSP) Group *Jun 2021 – May 2023*
Undergraduate Research Assistant (Supervised by [Prof. Feng Yin](#))

- Designed a novel grid spectral mixture kernel for GP with multidimensional input
- Developed two distributed algorithms for kernel learning in GP regression
- Presented a paper accepted at [FUSION 2022](#)

Shenzhen Research Institute of Big Data (SRIBD) *Jun 2021 – May 2023*
Undergraduate Research Assistant (Supervised by [Prof. Tsung-Hui Chang](#))

- Investigated federated matrix factorization for data clustering and recommender systems
- Co-authored a paper and a poster accepted at [IEEE ICASSP 2021](#)

Publications

R. C. Suwandi, F. Yin, “**GRAPE: Gradient Refinement and Progress-Aware Exploitation for Query-Efficient High-Dimensional Bayesian Optimization**,” *Preprint*, 2026. [Paper](#) [Code](#)

Y. Li, R. C. Suwandi, F. Yin, Y. Sun, W. Huang, W. Pu, “**MIMOMamba: From Scalar Duality to Matrix-Valued Attention**,” *43rd International Conference on Machine Learning (ICML)*, 2026. [Paper](#)

[ORAL] R. C. Suwandi, F. Yin, T.-H. Chang, “**Breaking the Curse of Dimensionality in Gaussian Process Training With Zeroth-Order Adaptive Perturbation**,” *51th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2026. [Paper](#) [Code](#)

R. C. Suwandi, F. Yin, J. Wang, R. Li, T.-H. Chang, S. Theodoridis, “**Adaptive Kernel Design for Bayesian Optimization Is a Piece of CAKE with LLMs**,” *39th Conference on Neural Information Processing Systems (NeurIPS)*, 2025. [Paper](#) [Code](#) [Poster](#)

R. C. Suwandi, Z. Lin, F. Yin, Z. Wang, S. Theodoridis, “**Sparsity-Aware Distributed Learning for Gaussian Processes with Linear Multiple Kernel**,” *IEEE Transactions on Neural Networks and Learning Systems (TNNLS)*, 2025. [Paper](#) [Code](#)

R. C. Suwandi, Z. Lin, Y. Sun, Z. Wang, L. Cheng, F. Yin, “**Gaussian Process Regression with Grid Spectral Mixture Kernel: Distributed Learning for Multidimensional Data**,” *25th International Conference on Information Fusion (FUSION)*, 2022. [Paper](#) [Code](#) [Slides](#)

S. Wang, R. C. Suwandi, T.-H. Chang, “**Demystifying Model Averaging for Communication-Efficient Federated Matrix Factorization**,” *46th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2021. [Paper](#) [Poster](#)

Honors & Awards

2nd Prize Award, Doctoral Research and AI Conference, CUHK-Shenzhen	2025
IEEE Signal Processing Society Scholarship	2024, 2025
Guangdong Government Outstanding International Student Scholarship	2020, 2021, 2025
Shenzhen Universiade International Scholarship Foundation	2024
School of Science and Engineering Postgraduate Studentship, CUHK-Shenzhen	2023
Undergraduate Research Award, CUHK-Shenzhen	2022, 2023
School of Data Science Dean’s List Award, CUHK-Shenzhen	2020, 2021, 2022, 2023
Full Tuition and Accommodation Scholarship, CUHK-Shenzhen	2019
Bronze Medal, Asia International Mathematical Olympiad (AIMO)	2018

Projects

- [OpenEvolve](#), open-source implementation of [AlphaEvolve](#) (LLM-powered evolutionary coding agent for algorithm discovery & optimization)
- [CAKE](#), LLM-driven framework to adaptively evolve Gaussian process kernels
- [ZAP](#), scalable, gradient-free optimizer for high-dimensional problems
- [PlugBO](#), modular framework for agentic Bayesian optimization
- [GRAPE](#), two-stage local method for query-efficient high-dimensional Bayesian optimization
- [Awesome BO](#), a curated repository of Bayesian optimization resources
- [PyCaret](#), low-code machine learning library in Python for automating end-to-end ML workflows
- [feature_engine](#), feature engineering library with scikit-learn-style APIs for production ML pipelines
- [pymoo](#), Python framework for multi-objective optimization, including evolutionary and surrogate-based algorithms

Teaching Experience

<i>Lead Teaching Assistant</i> , CSC6022 Machine Learning, CUHK-Shenzhen	Fall 2026
<i>Lead Teaching Assistant</i> , CIE6007 Machine Learning, CUHK-Shenzhen	Fall 2025
<i>Lead Teaching Assistant</i> , MAT2040 Linear Algebra, CUHK-Shenzhen	Spring 2025
<i>Teaching Assistant</i> , CIE6007 Machine Learning, CUHK-Shenzhen	Fall 2024
<i>Teaching Assistant</i> , MAT2040 Linear Algebra, CUHK-Shenzhen	Fall 2023, Spring 2024

Organizational Experience

<i>Dev Ambassador</i> , Qwen  , Alibaba Cloud	2026 – Present
<i>Co-Founder</i> , Institute for AI Driven Discovery of Algorithms (AIDDA) 	2026 – Present
<i>Co-Organizer</i> , AI4Science Community, alphaXiv 	2025 – Present
<i>Student Ambassador</i> , CUHK-Shenzhen	2024 – Present
<i>Graduate Student Member</i> , IEEE	2024 – Present
<i>Member</i> , IEEE Young Professionals	2024 – Present
<i>Member</i> , IEEE Signal Processing Society	2024 – Present
<i>Member</i> , IEEE Student Branch, CUHK-Shenzhen	2023 – Present

Services

<i>Journal Reviewer</i> , IEEE Transactions on Signal Processing (TSP)
<i>Journal Reviewer</i> , IEEE Transactions on Neural Networks and Learning Systems (TNNLS)
<i>Conference Reviewer</i> , Neural Information Processing Systems (NeurIPS)
<i>Conference Reviewer</i> , International Conference on Machine Learning (ICML)
<i>Conference Reviewer</i> , International Conference on Learning Representations (ICLR)
<i>Conference Reviewer</i> , IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)
<i>Conference Reviewer</i> , Knowledge Discovery and Data Mining (KDD)