香港科技大学(广州)
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY (GUANGZHOU)

数据科学与分析学域
DATA SCIENCE AND ANALYTICS THRUST
信息枢纽
INFORMATION HUB

DSA Research Experiences for Undergraduates

Research Project

Section1: Faculty Information

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Section2: Research Project Proposal

Project Title	AI & Graph Learning: Unlocking the Power of Networks
Project Description (max 800 words)	**Want to dive into cutting-edge AI research while mastering real-world skills? Join our project to explore Graph Learning and its impact on science, healthcare, and more!** **Here's why you'll love this:** ■ Hands-on AI: Get your hands dirty with real-world data and train Graph Neural Networks (GNNs) to solve complex problems like molecule prediction, social network analysis, and more. ■ Master Research Tools: Learn to use powerful coding tools like PyTorch, GitHub, and experiment tracking tools while developing industry-ready skills. ■ Exciting Challenges: Tackle graph learning tasks and experiment with model architecture to improve predictions, uncover hidden patterns, and push the boundaries of AI! **What You'll Learn:** ■ Graph Neural Networks and their applications ■ How to work with real-world graph datasets like molecular structures and networks ■ Experimentation and tuning to optimize AI models ■ Data preprocessing, coding practices, and creating a professional research environment

	Perks You'll Get: ■ Cutting-edge experience in AI research and coding ■ Industry-relevant skills that stand out to future employers ■ Possibility to contribute to a research paper or present at academic conferences ■ Personal growth through challenges and hands-on learning
Proposed Research Duration	Start Date: __2025____ / __04__ / __01__ End Date: __2025_____ / __07__ / __01__
Student/Researcher Duties	■ Learn essential tools (Python, PyTorch, GitHub). ■ Train and experiment with Graph Neural Networks (GNNs) on real-world datasets. ■ Modify models and analyze results to improve performance. ■ Document the work and write a final report. ■ Present findings and participate actively throughout the project.
Technical Skills Required	✓ Python ✓ Machine Learning ☐ Big Data ☐ R ✓ Deep Learning ☐ SQL ☐ C/C++ ☐ Other: _____
Preferred Student/Researcher Background	■ Basic Python programming (loops, functions, NumPy) ■ Familiarity with machine learning concepts (optional but helpful) ■ Understanding of graphs (nodes, edges, adjacency matrices) ■ Strong initiative and problem-solving skills
Maximum Number of Students/Researchers	☐ 1 ✓ 2

Section3: Pre-Application Research Exposure Meeting

Faculty members are encouraged to schedule a Research Exposure Meeting to introduce students to their projects.

Preferred Date	Mar 31st
Preferred Time	Morning
Meeting Mode	✓ In-Person ☐ Online
Venue (if in-person)	E4-401
Meeting Link (if online)	