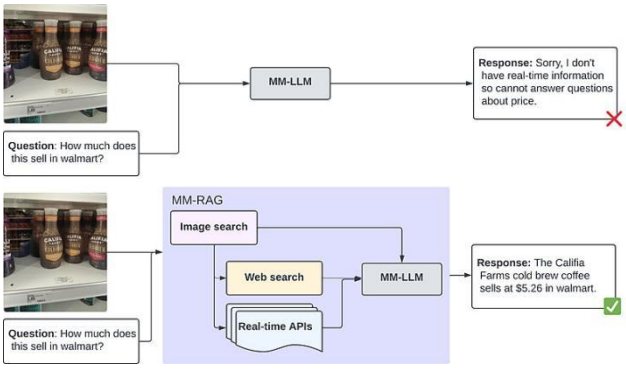
DSA Research Experiences for Undergraduates

Research Project

Section1: Faculty Information

Full Name	Yongqi ZHANG	Tel	18817555965
Thrust/Hub	DSA Thrust, Info Hub	Office	E4-414
Email	yongqizhang@hkust-gz.edu.cn		

Section2: Research Project Proposal

Project Title	Retrieval Augmented Generation Behind Wearable Devices
Project Description (max 800 words)	 **Want to build the next-gen smart glasses tech like Meta's Ray-Bans?** Join our team for the Meta CRAG-MM Challenge - Facebook's coolest AI competition where we teach computers to 'see' and answer questions through wearable camera lenses!  **Figure 1: Multi-model retrieval augmented generation (MM-RAG)** **Here's why you'll love this:** ✨ **Real-world Magic:** Work with actual first-person camera images (just like Snap Spectacles!) to create AI that helps people get instant answers about what they're seeing

	✨ **KDD Cup History Maker:** Be part of the FIRST EVER competition combining visual smarts + search superpowers in this top data mining conference ✨ **Learn Cutting-Edge Tech:** Master AI skills like multi-modal RAG (fancy term for making AI smarter using search + images) - **develop end-to-end systems capable of addressing multimodal, multi-turn question answering challenges.** **<u>Perks you'll score:</u>** ☑ **GPU Powerhouse:** Train models on our army of H100/A100 super-GPUs **(yes, the same ones tech giants use!).** ☑ **Skills That Wow Future Employers:** Master-level AI tricks & build systems. ☑ **Glory Alert: Top teams get to:** ● Publish technical reports ● Present at KDD Conference ● Snag awards on the global stage ☑ **Join the Elite:** Team up with a Kaggle Grandmaster (think: Global rank top 0.1% AI Olympics gold medalist!) and unlock invites to elite competitions!
Proposed Research Duration	Start Date: __2025____ / __04__ / __01__ End Date: __2025_____ / __07__ / __01__
Student/Researcher Duties	1. Able to participate in the full process of solution iteration, continuously propose innovative ideas, and lead experimental validation. 2. Capable of fully utilizing existing computational resources to conduct rapid experiments.
Technical Skills Required	✓ Python ✓ Machine Learning ☐ Big Data ☐ R ✓ Deep Learning ☐ SQL ☐ C/C++ ☐ Other: _____
Preferred Student/Researcher Background	1. Strong programming or engineering implementation skills. 2. Familiarity with the Linux environment, proficiency in Python, and experience using foundational libraries such as PyTorch for deep learning. Capable of conducting independent deep learning-related experiments. 3. Strong sense of purpose and initiative, with a desire to achieve breakthroughs in projects or high rank in competitions.

	4. Preference will be given to candidates who have won awards in competitions such as Alibaba Tianchi, Kaggle, NeurIPS Competition, WSDM Cup, KDD Cup, etc.
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)	