

Postgraduate Seminar Series

Research Findings Seminar – Developing an Intelligent Chatbot for Tax Planning: A GraphRAG Approach

- **Date:** 12 May 2026
- **Time:** 10:00--11:30
- **Venue:** WYL113
- **Presenter:** Mr Liu Jintai
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Abstract: Natural language processing (NLP) has advanced rapidly in accounting research, yet applications in tax planning remain underdeveloped, constrained by specialized legal sublanguage, relational reasoning demands, long-context statutory interpretation, and hallucinations in general large language models (LLMs). This study develops a knowledge-grounded conversational AI system for tax planning using a Graph Retrieval-Augmented Generation (GraphRAG) framework integrated with GPT-4o-mini. We implement the model using Hong Kong's Inland Revenue Ordinance and evaluate performance on 116 sub-questions from seven HKICPA Taxation examinations. Empirical results show that GraphRAG nearly doubles answering accuracy compared with the baseline LLM, with particularly pronounced improvements in complex case-based questions requiring multi-hop statutory reasoning. This study contributes to accounting NLP by extending research from descriptive classification to generative, reasoning-intensive tax advisory; introduces GraphRAG to taxation research and validates the superiority of relational knowledge retrieval over semantic matching; and constructs a unique tax dataset linking codified law to professional examination questions, offering a replicable benchmark for future computational tax research.

All are welcome

- For any inquiries, please contact us at hkibs@ln.edu.hk or call us at 2616-8374.