Tonglin Tony ZHANG

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EDUCATION BACKGROUND

Nanjing University of Aeronautics and Astronautics — Nanjing, China

Bachelor of Economics. GPA 85% — *2020 - 2024*

Academic Scholarships (several second and third class)

INDUSTRY EXPERIENCE

Deloitte IBond (Shanghai) Company Ltd. — Shanghai, China

LLM RAG Dev at *RiskNova* — *Dec 2023 – Feb 2024*

- **Data pre-Processing**: using coordinate reduction to splice text paragraphs from OCR results of ESG reports; designing prompt to extract complex structures such as multidimensional tables; using GPT Vision to extract statistical chart; building ORM databases to store the original text and the vector data, and annotating the metadata information; using multi-processing to process large-scale report sets;
- **Query Clarification**: designing prompt for information expansion of ESG metrics with synonyms and contextual words; extended rewriting of ESG metrics based on knowledge graphs;
- **Retrieval and Noise Reduction**: designing a three-line hybrid retrieval based on keyword retrieval, vector retrieval, and metadata matching; using recursive retrieval for complex problems: problem decomposition, sub-problem caching and memorization, and controlling the depth of recursion using tail-recursive optimization; using LLM to get generative summaries of retrieved content, and Top-P sampling to control the textual diversity;
- **Designing Q&A System**: using Chain of Thought for multi-step reasoning on complex questions; using automatic reasoning and tools-use to enhance the reliability of answers in complex situations, particularly scenarios involving numerical calculations; using Self-Consistency to ensure consistency of answers;

Ailurus Biotechnology (Beijing) Ltd. — Remote

Data Science Intern at R&D — *Mar 2022 – Mar 2023*

- **Automated market analysis**: crawled PubMed database papers and related authors information; using prompt to extract and summarize key points of the crawling results, and use association rules to build market user profiles; reduced customer acquisition cost of Sales team by 40%;
- **Gene Sequence Data pre-Processing**: one-dimensional sequences are two-dimensionalized using a fractal algorithm, which improves the training speed by 30% compared to the conventional One-hot coding method on traditional models;
- **Gene Sequence Feature Mining**: deployed CNN/LSTM/RNN models to feature mine gene sequence data, explore the relationship between sequence expression and post-Log2 significant values and make predictions; using stochastic and Bayesian searches for model hyperparameter optimization;

RESEARCH EXPERIENCE

Hong Kong Polytechnic University	*Mar 2024 - Present*
University of Chinese Academy Science	*Jul 2023 - Dec 2023*
Shanghai University of Finance and Economics	*Sep 2023 - Nov 2023*
Nanjing University of Aeronautics and Astronautics	*Mar 2022 - Mar 2023*

SKILLS & INTERESTS

Programming: Python(Master), Golang, Julia

Academic Interests: LLM (RAG, Security-Attack, Figment, etc.); Document Layout Analysis; Quantitative Finance (High-freq Trading, Limit-Order-Book Modeling); Economics (Auction Gaming); Green Finance (Carbon foot-print trace measure); Information System Management (Text Analysis with AI); Central Bank Digital Currency

Amateur Interests: Biking, Running, Neuroscience, System Programming