

Tengrui Kong (Rio)

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RESEARCH INTERESTS

My research interests focus on advancing NLP and enhancing LLM reasoning, building trustworthy models, and integrating time series forecasting.

EDUCATION

Master of Computer Science, Missouri University of Science and Technology (**GPA:3.7/4**) Aug 2024 — May 2026

- **Relevant Courses:** Natural Language Processing, Analysis of Algorithms, Intro to deeplearning, Foundations Data Mgmt, Sci Programming Python, Scientific Programming with Python, Intro to Machine Learning, Large Language Models, Probability and Application in Computing.

Master of Economic, Finane, University of International Business And Economics (GPA:3.14/4) 2015

Bachelor of Science, Communication Engineering , East China Jiaotong University(GPA:80.14/100) 2012

SKILLS

Languages: Python, SQL, JavaScript, Java, C++
ML/AI: PyTorch, TensorFlow, scikit-learn, Hugging Face, GANs, Transformers
NLP Tools/ Cloud : SpaCy, NLTK, BERT, Gensim, Git, AWS (EC2, RDS, S3)

RELEVANT EXPERIENCE

Human-Centered AI Lab, Missouri University of Science and Technology Rolla, MO
Research Assistant(Volunteered) Sep 2024 – Present

- Assisted in multiple ongoing research projects focused on large language models (LLMs) and deep learning applications in scientific and time series data.
- Conducted model training and evaluation using PyTorch, Hugging Face, and TensorFlow.
- Supported the development of tokenization strategies and inference workflows for adapting LLMs to domain-specific tasks.

PUBLICATION

1. M.Alizade, SK. Maity, **T. Kong**, et al. “*SciTables: Enhancing Table-to-Text Generation with Large Language Models.*” Manuscript in preparation for ACL 2025.

PROJECTS

Research Project – SciTables Dataset: Enhancing Table-to-Text Generation (Sci-Tables) Mar 2025 – Sep 2025

- Co-developed the **SciTables dataset** with 120k structured table–text pairs for evaluating LLMs’ factual and semantic fidelity in scientific writing; work resulted in a **manuscript in preparation for ACL 2025**.
- Designed and implemented Python pipelines to process **600k+ LaTeX sources**, extracting, cleaning, and structuring tables with their referencing paragraphs into JSON.
- Benchmarked state-of-the-art LLMs (**LLaMA-3.3-70B**, **Mistral-24B**, **Gemma-27B**) using multi-perspective evaluation: (i) semantic metrics (BLEU, ROUGE, BERTScore), (ii) **LLM-as-a-judge**, and (iii) human evaluation.

Research Project – SCI_Reason Cross-Domain Implementation with MCTS Enhancement (SciReason) June 2025 – Aug 2025

- **Adapted SCI_Reason methodology from medical to financial domain** after authors provided no code, implementing complete multimodal reasoning pipeline for financial research papers and market analysis documents.
- **Extended original research** by integrating Monte Carlo Tree Search algorithm for chain-of-thought reasoning generation, improving upon paper’s approach with domain-specific financial reasoning templates achieving **0.84+ quality scores**.
- **Developed cross-domain pipeline** combining automated text parsing, dual-LLM semantic distillation (**Llama-3-70B**, **LLaVA-1.6-7B**), and financial entity recognition (**SciBERT**, **spaCy**) for processing financial publications.

- **Demonstrated methodology generalization** with production-ready implementation featuring automated quality evaluation, scalable batch processing, and **1000x faster inference** than LLM-based approaches across financial reasoning tasks.

Personal Project, *Neural Network Optimization on MNIST*: (Neural Network Optimization) Mar 2025 — May 2025

- Developed a multi-layer perceptron from scratch (using NumPy) for binary classification (even vs. odd) on the MNIST dataset.
- Implemented forward propagation, backpropagation, and gradient computations with ReLU and sigmoid activations and binary cross-entropy loss.
- Benchmarked optimizers: GD (81.25%), SGD+Momentum (87.13%), Adam (96.82%).

Additional Projects: **Keeper Note App** – React.js SPA with local storage + Material-UI v5 UI; **Stock Tracking Web App** – React.js + Node.js/Express with API caching and lazy loading; **Permalist** – **Full-stack Todo App** (Express, PostgreSQL, secure CRUD, dotenv-based production setup); **Scientific Visualization** – Python + Three.js interactive 3D rendering (GitHub Link)

WORK EXPERIENCE

Student Assistant (Part-Time), International Students & Scholars Services (ISSS) Apr 2025 – Present *Missouri S&T, Rolla, MO, US*

- Supported a multicultural community by simplifying visa and documentation processes for international students.
- Improved data accuracy and streamlined workflows through digital record management.
- Strengthened cross-team collaboration and communication in a fast-paced academic office.

Principal Staff Member of Division of Science and Technology Finance Nov 2020 – Jun 2024
Changsha Science & Technology Bureau *Changsha, China*

- Produced 100+ analytical reports by applying **Python** and **SQL** for large-scale policy and investment analysis.
- Designed workflows to evaluate technology startups, directly supporting the creation of a \$300M investment fund.
- Conducted quantitative research on innovation trends to guide strategic decision-making.

Bond Investment Analyst of Fixed Income Department Oct 2019 — Nov 2020
First State Cinda Fund Management Co.,ltd *Shenzhen, China*

- Conducted quantitative analysis of fixed-income securities, focusing on credit risk and market trends.
- Provided data-driven insights to support trading and portfolio decisions, enhancing overall performance. Maintained a **zero-default record**.

Bond Investment Analyst of Fixed Income Department Jul 2015 — Nov 2019
YINGDA Securities Co.,Ltd *Shenzhen, China*

- Analyzed financial data and macroeconomic indicators to support fixed income investment decisions and portfolio allocation.
- Maintained a consistent **zero-default track record** through thorough due diligence and risk monitoring.

STANDARDIZED TESTS

GRE: 167 Quantitative, 154 Verbal *Taken: 2023*
IELTS: Overall 7.0, Writing 6.5 *Taken: May 2023*

CERTIFICATIONS

AWS Certified Cloud Practitioner Issues Jul 2025, Expires Jul 2028
The Complete Full-Stack Web Development Bootcamp July 2024 - Aug 2025