GANG ZHANG

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EDUCATION

China University of Petroleum, Beijing, China Sept. 2020 – June 2024
Bachelor of Science, Management and Information System
Overall GPA: 84.2/100
Coursework: Data Structure and Algorithms (90), Information Systems Analysis and Design (88), Data Warehousing and Data Mining (91), Information Analysis (88), Machine Learning (90), and Deep Learning (92)

PUBLICATIONS

Gang Zhang, Haobo Liu, Shibo Huang, Chenxi Zhang, Jianwei Liu, "CaSTGCN: Deep Learning Method for Information Cascade prediction", *Accepted by the 2024 China Automation Congress (CAC).*

RESEARCH EXPERIENCE

Research Intern, **National Research Center for Software Engineering** June 2024 – Present
Advisor: Prof. Xueyang Liu of Peking University
- Conducting research on multimodal metaphor detection and employing advanced deep learning models including VATT for video and audio data and RoBERTa for text data.
- Performed audio data scraping for metaphoric recognition with structured semantics knowledge and wiki data for knowledge graph construction.
- Utilized a fine-tuned language model for classification and leveraged prompt engineering techniques to help detect metaphoric and satire in language used in political domains.
- Engaged in LLM-based family health consultant agent research.
- Conducting research on small language model-based agent and reasoning.

Research Intern, **Institute of Strategic Consulting** Nov. 2023 – March 2024
Advisor: Prof. Haihong Feng of Chinese Academy of Sciences
- Conducted a comprehensive analysis of the data policy trends and focal points across multiple years in China.
- Applied Latent Dirichlet Allocation (LDA) to analyze topic distribution in historical policy documents, using perplexity to evaluate model performance.
- Utilized a pre-trained BERT model to extract feature representations from policy texts.
- Implemented HDBSCAN clustering on the extracted features, employing silhouette coefficient for evaluation.

ACADEMIC EXPERIENCE

Single Well Production Limit Economic Evaluation Software, **Sinopec Petroleum** Sept. 2023 – June 2024
Advisor: Prof. Yu Gong
- Independently developed a software for economic evaluation of single well production limits based on .NET.
- Successfully enabled a functionality to calculate various required economic index based on input features.
- Integrated six machine learning models including XGBoost and LSTM to predict income, capex and opex.

CaST-CGN: A Deep Learning Method for Information Cascade prediction July 2023 – June 2024
Advisor: Prof. Jianwei Liu
- Researched on social network information dissemination prediction using Graph Neural Networks.
- Led a team of three students in designing and conducting experiments and authoring research papers.
- Designed an advanced model to predict the future incremental size of a single information cascade sequence.
- Successfully improved the performance of state-of-the-art models on Weibo, DBLP and a synthetic dataset in predicting the future increasement in information dissemination.

Energy Model Design and Implementation, **CNOOC Energy Economics Research Institute** May 2023 – Nov. 2023
Advisor: Prof. Yu Gong

- Led the design and implementation of the China Economy-Energy-Environment Integrated System Model (IAME3C) based on MESSAGEix.
- Implemented an algorithm to predict future energy activity levels under different constraints and energy demands.
- Managed a team to develop a front-end visualization software based on Panel and Python that leverages different models under various energy scenarios.

Data Warehouse Design and Implementation, ***CNPC Planning Institute*** *April 2023 – Sept. 2023*
Advisor: Prof. Yu Gong

- Collaborated with a team to design and implement a data warehouse using PostgreSQL and Metabase.
- Managed database content and leveraged Metabase's data visualization capabilities for analysis and reporting.

COMPETITIONS

Specialized Track Competition Participant, **Challenge Cup 2023,** Beijing, China
Advisor: Prof. Ming Li

- Successfully developed algorithmic solutions to prevent theft in supermarket self-checkout areas.
- Took the responsibility to implement an ST-GCN-based human action recognition deep learning framework.
- Project was awarded the First Prize.

Participant, **Mathematical Contest in Modeling (MCM) 2023,** Raleigh, NC

- Led the software programming development and data visualization process.
- Developed an innovative multi-level indicator system to measure light pollution.
- Adopted the entropy weight method to our modeling objectives for determining indicator weights.
- Final paper was awarded the Second Prize.

Participant, **May Day Modeling Competition 2022,** Beijing, China

- Implemented linear programming and exponential smoothing algorithms in R and created visualizations.
- Leveraged various operational research methods to develop a procurement strategy for medical microrobots.
- The teamwork was awarded the Third Prize.

HONORS AND AWARDS

- Third-Class Scholarships and Outstanding Student – China University of Petroleum (Beijing) 2020-2023
- Science and Technology Progress Award – China University of Petroleum (Beijing) 2023
- Outstanding Graduate Award - China University of Petroleum (Beijing) 2024 (5/37)

LANGUAGES AND SKILLS

Programming Languages: Python, C#, Java, R, C++, SQL, HTML, CSS
Software and Tools: Stata, Blender, Unity, RStudio, Pixso, Vensim, Arena, Neo4j
Operating Systems: Windows, Linux (Ubuntu)
Working Languages: Chinese (native), English (professional)