Chunbo Pang

Tel: +86 18912819015 | Email: 22060706@zju.edu.cn
Alibaba Xixi-A District, Yuhang District, Hangzhou City, Zhejiang Province, China

Profile Summary

During my postgraduate studies, I participated in many horizontal and vertical projects. My mentor is Academician Gao Xiang. I was recruited by Alibaba, a first-tier Internet company, to work in software development. I have been an intern in algorithm research at Alibaba Cloud. I love programming and have development and algorithm engineering capabilities. I have published 5 SCI and core papers in my undergraduate and master's degrees, 3 invention patents, and 2 authorized utility models.

Education

Jiangsu University-Energy and Power Engineering Bachelor School of Energy and Power Engineering 2016.09 - 2020.07

- Major in Energy and Power Engineering, GPA: 88.7/100 (**Ranked 1st**)
- Recommended for direct postgraduate admission to Zhejiang University without examination

Zhejiang University-Energy Power Master School of Energy Engineering 2020.09 - 2023.06

- Mentor: Prof. Xiang Gao (**CAE Member**)
- Research Focus: AI-driven fault early detection, time-series forecasting.

Scientific Research Experience

High frequency acoustic vibration signal monitoring terminal based on intelligent things Hardware and software development 2020.11 - 2022.08

Project background: The existing DCS and SCADA systems of traditional thermal power and wind power cannot meet the monitoring and diagnosis requirements of key equipment such as fans and pumps.
Solution: design the acquisition scheme, and build a remote signal acquisition terminal based on high frequency vibration/acoustic wave sensor, high frequency acquisition card, edge computer, etc. to realize the timing acquisition and transmission of high frequency vibration/acoustic wave signal of pump/fan, and display real-time signal and fast Fourier transform and other information on the web page, which has been installed on the desulfurization system site of a 50MW thermal power plant in Jiaxing, Zhejiang Province.

Fault early warning algorithm for forced oxidation system in coal-fired power plant Algorithm Development Engineer 2021.06 - 2022.02

Project background: In order to ensure the clean and environmentally friendly operation of the power plant, the desulfurization system has been under high load and harsh working conditions for a long time, resulting in frequent failures, affecting the efficiency of desulfurization and damaging the efficiency of the power plant.
Solution: Based on the Keras deep learning framework, a time series prediction model combining long-short-term memory network (LSTM) and attention mechanism (Attention) is proposed, and the residual sequence of the predicted value and the real value is analyzed by sequential probability ratio (SPRT), so as to realize the online dynamic fault warning.
Project results: prediction model accuracy: R2 = 0.982,RMSE = 0.309; can be tens of hours in advance of the fault warning. The results were published in SCI "Process Safety and Environmental Protection" in the field of environmental engineering, IF: 7.926/Q1.

Scientific Research Achievements

- "An integrated LSTM-AM and SPRT method for fault early detection of forced-oxidation system in wet flu gas desulfurization" (2022). *Process Safety and Environmental Protection* (First author, SCI JCR Q1, time series diagnosis algorithm)
- "Bubble in the cross-flow of geometric and dynamic characteristics" (2020). "*Irrigation and Drainage Mechanical Engineering* ". (First author, EI)
- A total of published SCI, core papers 5, public invention patents 3, authorized utility model 2

Work Experience

Ali Group-Tao Tian Group-Self-employed Technology-Commodity Technology-Merchant Technology: Development engineer 2023.07 - Present

Self-operated technology marketing investment system

- **background:** marketing investment is the core driving force for the achievement of cat super business objectives. I am responsible for the business development, system migration and R & D efficiency improvement of the investment promotion system. The system integrates the underlying capabilities of marketing, wind control, budget, settlement, user growth, Ali mother, etc., and provides 40 + kinds of preferential play reporting support for upstream businesses such as commodity operation, marketing activities, price custody, etc.
- **Description of duties**:
  - **investment model and architecture reconstruction:** deconstruct the core atomic business of investment promotion (target selection, activity creation, commodity presentation and activity tracking) by using domain-driven design (DDD), identify and construct the core domain model (planned recommend products, investment promotion plan and investment promotion registration record), flexibly support diversified business customization through capability combination, and significantly reduce the customization cost of each self-operated industry; Define standardized investment promotion agreement based on highly abstract model, increase the access efficiency of the new game by 55%, saving 2 research and development manpower.
  - **China Merchants recommend Engine Optimization**: based on OpenSearch, build a reportable commodity recommend engine, build a commodity wide table and realize real-time filtering of invalid commodities through rule pre-verification and dynamic index update, support millisecond-level accurate retrieval of 10,000-level commodities (response <200ms), and increase the success rate of merchant commodity reporting by 30% +.
  - **Event-driven and high availability assurance**: Define the delivery process of event reconstruction play in the investment promotion field, realize real-time dump of state by monitoring the state change MQ in the foreign domain, so as to realize decoupling of the investment promotion state machine from the foreign domain, and use MQ retry mechanism to ensure the success rate of activity delivery, significantly improve the high availability of the system, and reduce the number of upstream and downstream work orders by 80%.
  - **Investment field construction:** leading support Taobao seconds kill, cat super card and other 20 + core public and private domain investment promotion field construction and upgrade, to ensure the promotion and efficient landing of daily activities; For example, upgrade the price

change rollback link to realize asynchronous return of price change results for marketing, and ensure strong consistency of cross-system data through idempotent design + timing proofreading mechanism.

Commodity Operation AI Workbench

- **background:** the current small channel operation process in the artificial dependence is too large, touch the process is long. It is proposed to reconstruct the commodity operation process through AI Agent's intelligent planning, automated execution and feedback capabilities based on multi-dimensional commodity operation objectives, reduce internal repetitive mechanical operation coordination, break through the human execution ceiling, and greatly improve operational efficiency.
- **Description of duties:**
  - **channel inventory:** design and develop a Muti-Agent-driven intelligent inventory and task distribution engine. Based on GMV objectives, product characteristics and channel feedback, the large model is used to make multiple rounds of decision-making, and accurate inventory and purchase invitation tasks are automatically generated and issued. Filter invalid registrations through intelligent access rules (front + mutual exclusion), which is expected to improve inventory efficiency by 70% +;
  - **inspection & Agency:** based on dynamic inspection of rules such as inventory, purchase restriction and 0 sales, risk diagnosis and attribution analysis are carried out in combination with large models, and agency matters and risk warnings are automatically generated. Objective: Through AI diagnosis to assist decision-making, the ability of productized rules to improve the accuracy of marking, which is expected to reduce the energy of small 2 by 40% and thus reduce outsourcing costs.

Internship Experience

Ali Group-Ali Cloud Intelligence-Product Solutions and Large Website Division: Algorithm research intern 2022.08 - 2022.11

- With Tsinghua University, the study of the current most potential CO_2 brine layer storage method, based on convolutional neural network U-FNO, the construction of a dynamic CO_2 injection scenario for the pressure and saturation prediction agent model, MSE were 2.8x 10-7 and 1x 10-4, the prediction speed compared to the traditional numerical simulation method has about 1000 times the improvement;
- Integrate deep learning-based proxy model and reinforcement learning-based optimization model code, and rely on Ali Clound's "double carbon" management service product energy consumption treasure platform to complete model deployment.

Skills List

- **Agent development:** master the development paradigm of B- side business Agent, such as Muti-Agent architecture, MCP, A2A and other protocols, and understand LangGraph and other frameworks;
- **Algorithm Development:** understand the principles of LSTM, Transform and other models, and be able to use Pytorch to solve time series prediction problems;
- **Java:** familiar with Java core technology, understand JVM memory model, garbage collection mechanism and performance tuning, master Java design patterns such as factory, agent, strategy, decorator, etc;
- **Database:** familiar with MySQL index, have experience in slow query optimization, sub-database and sub-table of e-commerce system, understand CAP principle and MySQL and cache consistency guarantee;
- **Middleware:** familiar with the use of message queue (RocketMQ), cache, timing tasks and other middleware, understand the openSearch distributed search engine;
- **Microservices:** familiar with Spring Cloud Alibaba ecology (such as HSF and Sentinel), and have practical experience in service governance (current limiting, fusing, and demotion) in micro-service scenarios.