

Keyu YAN

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PROFILE

- Easy-going personality, strong learning ability and motivation.
- 2 years of programming learning and developing experience in the Golang.
- Knowledge of Docker, k8s, helm, skaffold, argoCD, argoWorkflow, for maintaining 8 product.
- Knowledge of Python for data analysis and Deep Learning / Reinforcement Learning programming.
- Knowledge of Git and GitHub, familiar with Git flow and Forking.
- Knowledge of design patterns and concurrent programming skills.
- Knowledge of MySQL performance optimisation, Elasticsearch, MongoDB, Redis, Rabbitmq, and Kafka.
- Learn in progress about modern C++ syntax (std17), Java, rust and typescript.

EDUCATION

09/2023-06/2025 *MSc in Computer Engineering* In Progress
National University of Singapore

Modules: Deep Learning, Machine Learning, Evolutional Algorithm.

Project: Model-based RL for Industry Applications.

09/2022-06/2023 *Exchange Credits Programme* GPA: 93.8/100
National University of Singapore

Honours: Outstanding Achievement Award.

09/2019-06/2023 *BSc Computer Science and Technology* GPA: 3.863/4
Northwestern Polytechnical University Rank: Top 5%

Honours: First Class Scholarship of School, Second Class Scholarship of Aviation Industry .

English Proficiency: IELTS6.0,CET6 518.

Competition Awards:

- First Prize of ICAN Innovation and Entrepreneurship Competition 2022 in Artificial Intelligence Track
- First Prize in Mathematical Modeling Competition for U.S. College Students in 2022.
- First Prize in the Final of the 4th "Chuanzhi Cup" Programming Competition.

INTERNSHIP EXPERIENCES

10/2023-Present Backend Engineer Intern (Cloud Infrastructure) Data-Technical
Infrastructures-ByteCloud-Middleware, TikTok

- Developed a concurrent web crawler to collect data on the migration status of cronjobs to the cloud, generating daily reports. Created a Grafana dashboard to monitor various metrics of the cronjob system, enhancing visibility and real-time monitoring.
- Developed cronjob system and BPM work order SDKs, utilising these libraries to automate daily checks on upstream and downstream components.
- Designed and implemented a monitoring system to match main repository versions before and after cronjob migration in both cloud and on-premise environments, ensuring version compatibility.
- Conducted namespace migration of components in a Kubernetes production environment and deployed workflows efficiently using Argo Workflow.
- Wrote a log cleaner deployed on all nodes (daemonset approach) to prevent node crashes caused by excessively large logs.
- Participated in the backend development of the core DevOps platform project, responsible for encapsulating the ElasticsearchV8 client and implementing the CRUD mechanism for Kubernetes object (currently v1) raw information.
- Assisted in the overall cloud migration of mid-sized CN and i18n business services, including operational and development support.

07/2022-08/2022 Intern, Standardised and Innovative Association of Zhijiang Laboratory

- Collecting and organising working materials.
- Participated in the "Workshop on Standardisation of Intelligent Construction".
- Co-published the article "Date and Time Information Exchange Representation Part I: Basic Principles".

PROJECT EXPERIENCES

04/2024-05/2024

Dual-token Non-separated Personal Blog

- Utilizes the Gin framework as the back-end framework. Implements Prometheus and Grafana for visualizing API QPS. Develops front-end pages with Go templates and native HTML, CSS, and JavaScript.
- Uses a dual-token solution with session storage, JWT, and cookies for login authentication.
- Stores blog data with GORM and uses Redis to store the cookie token, ensuring that users do not lose submission privileges when nearing the expiration period.
- The project prototype has been realized, but recently discovered the golang based static site generator Hugo. This project has been terminated, and the articles are being migrated to a Hugo + GitHub Pages blog project.

09/2023-04/2024

Model Based Reinforcement Learning for Industry Applications-NUS CEG Academic Project

- Used a simulator to model an industrial environment with 4 factories, 8 machine groups, and 2 production lines using Markov Decision Process (MDP). Employed Deep Double Q-Network (DDQN) and Proximal Policy Optimisation (PPO) algorithms separately to control the production efficiency of the 8 machine groups, enabling the agent to achieve high production efficiency.
- Utilised an ensemble of stochastic models to model the environment dynamics.
- Performed Model-Based optimisation on DDQN and PPO agents using the environment model, maintaining an additional generated data replay buffer for data augmentation.
- The Model-Based version exhibited significantly faster training convergence speed while achieving a final convergence level comparable to the Model-Free version.

12/2022-04/2023

Editable Text-Driven Image Generation Light Social App-Final Year Project

Project Description

- Developed a front-end and back-end separated Android application, employing gRPC to achieve a microservices architecture. The back-end includes a Gin-based gateway, Go regular service nodes, and Python generation algorithm service nodes.

Modules

- **Authentication and Authorisation:** Implemented user login and registration functionalities.
- **Instant Messaging:** Developed real-time instant messaging features.
- **Social Content Sharing:** Created modules for users to share generated images with accompanying text.
- **Image Generation:** Implemented image generation functionality using PyTorch.

Infrastructure and Optimisation

- Utilised Redis and Kafka to enhance modules' capacity to handle heavy traffic.
- Implemented database transactions to ensure data consistency between hard disk and memory. Improved database query efficiency through Go concurrent programming techniques.

Technologies Used

- Deep Learning Algorithms -- PyTorch; Backend -- gRPC, Gin, Ginkgo, Vipiper, Cobra, Swagger-go; Data Components -- MySQL, RabbitMQ, Redis; Frontend -- Uniapp, Vue; Maintenance -- Docker.

Main Responsibilities

- Designed RESTful API and gRPC API. Developed backend functionalities, including text-to-image algorithms. Contributed to front-end design. Conducted unit testing, benchmarking, and stress testing.

2022

Quantitative Trading Strategy for Gold and Bitcoin-MCM/ICM

Developed a robust quantitative trading model for gold and bitcoin, utilising time series analysis and data mining techniques.

- **ARIMA Time Series Analysis:** Employed ARIMA to predict future values.
- **Data Mining Techniques:** Applied apriori correlation analysis and least squares fitting
- **Quantitative Trading Model:** Developed a stable trading strategy, yielding consistent returns over data.
- **Optimisation with Genetic Algorithm:** Utilised genetic algorithms to optimise the capital allocation ratio.

2022

ICAN Innovation and Entrepreneurship Competition

- Teamwork of a disease vector detection system in the storage process.
- Implemented two data transfer options: shared memory and socket transfer.
- Executed detection every 5 frames to balance accuracy and system overhead.
- Optimised YOLOv5 algorithm using CIoU and DIoU_NMS.
- Improved detection accuracy by 7%, particularly for small-sized targets.
- Introduced parallel processing for object segmentation, dividing each detection into four parts for efficient thread-based execution.