MAPLE (FENGYI) ZHANG

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EDUCATION

University of Illinois Urbana-Champaign Aug. 2022 - Aug. 2024 (*Expected*)
Master of Computer Science

Shandong University Sept. 2017 - Jun. 2021
Bachelor of Engineering in Computer Science and Technology Overall GPA: 3.82/4.0
Relevant Coursework: Data Structure & Algorithm, Computer Networks, Database Systems, Operating Systems

TECHNICAL SKILLS

Programming: Go, C/C++/C#, Python, PHP, Java, JavaScript, TypeScript, Solidity, SQL, MQL, Cipher, Thrift, Shell
Frameworks/SDKs: Gin, GORM, gRPC, React/Native, Express, .Net, CodeIgniter, Tensorflow, Pytorch, Scikit
Software/Platforms: Git, Node, MySQL, PostgreSql, MongoDB, Matlab, Apache, Nginx, Pulsar, Redis, Consul, Postman, Swagger, Jmeter, Jenkins, Azure, AWS, GCP, Firebase, Docker, Unity, Wireshark, Hardhat, Remix, Colab

PROFESSIONAL EXPERIENCE

Nethermind Aug. 2023 – Nov. 2023
Internship Program @Ethereum Foundation, Remote

- Implemented and migrated new architecture design for Voyager, a StarkNet blockchain explorer, from AWS Lambda and Starknet gateway to AWS ECS and RPC endpoints, rewriting 2 APIs and drawing 2 arch diagrams
- Completely refactored search module to provide user appropriate search options depending on their input, resulting in a reduction of search latency by ~1000 ms
- Optimized and improved retrieving efficiency from AWS RDS by adding indices and rewrites postgresql queries
- Devised an prompt engineering method for auto-detecting and decoding Cairo types to display transaction calldata in human-friendly format, refining accuracy wrt. traditional regex matching.

Microsoft Jan. 2022 – Aug. 2022
Software Engineer, Suzhou, China

- Designed and implemented a seamless PC-Phone pairing flow via QR/Accessibility code with 8 RESTful APIs and .Net Framework, increasing completion rate during Windows OOBE from 28.3% to 35.4%.
- Reduced server and database pressure by employing microservice architecture, asynchronous programming, caching, websockets, long polling, and API throttling, achieving a 97% API success rate at 720 RPS.
- Built account-based cryptographic trust relationships between PCs and phones by leveraging JWT encryption on certificate, device, and account information to ensure secure data transportation and verification.
- Improved service reliability and availability by adding over 2,000 lines of unit/functional/end-to-end/load tests and metric telemetry for anomaly detection, analytics, and troubleshooting.

Didi Global Jul. 2021 – Dec. 2021
Software Development Engineer, Beijing, China

- Refactored 6 APIs of Point of Interest (POI) service that serves 15 million users per day from PHP to Go, among which CPU idle time improved to 73%(36% BEF) and TP99 latency reduced by 51% given QPS of 2000
- Divided business process into pluggable modules with inner workflow engine and replaced 8 RESTful APIs with Didi RPC (DiRPC) protocol with Service Discovery (DiSF) components for better SOA governance
- Applied A/B testing to realize canary deployment, configuration synchronization and strategy experiment, and employed metrics components to trace logs generated during service context for trouble shooting
- Managed online metric alarms (error ratio, latency etc.) of over 22 APIs and 16 downstream services while on-call

Alibaba Cloud Jul. 2020 – Sept. 2020
Software Engineer Intern, Hangzhou, China

- Chaired project of route traceback based on by-pass sniffing for SLA monitoring and network fault location
- Constructed spoofed source VIP packet sequences with increasing TTL fields to specific endpoint using Scapy
- Employed traffic mirroring service for packets capturing and asynchronous I/O with call-back filtering function
- Delivered on Advanced Anti-DDoS clusters while being elastically extendable via configuration files

ACADEMIC PROJECTS

Autonomous Vehicle Bootcamp Jan. 2024 – Mar. 2024

Course Project:*CS588: Autonomous Vehicles*

- Engineered an autonomous pedestrian detection system to halt vehicles safely using advanced trajectory planning and object detection algorithms.
- Refined 3D pedestrian tracking through precise calibration and fusion of stereo camera and LIDAR data, accurately estimating pedestrian positions and movements.
- Implemented dynamic collision avoidance strategies, using real-time pedestrian tracking to modify vehicle paths and prevent potential accidents.
- Validated system performance through rigorous real-world testing, demonstrating the ability to dynamically respond to pedestrian movements for enhanced safety.

Twitter Sentiment Analysis Oct. 2022 – Dec 2022

Course Project:*CS410: Data Mining and Information Retrieval*

- Led the development of the sentiment analysis model by building and training it with the Sentiment140 dataset containing 1.6 million tweets from Kaggle
- Applied advanced technical skills in data preprocessing, utilizing Google Colab for data cleaning, stemming, lemmatization, and stopword filtering
- Explored several classification models like Bernoulli Naive Bayes, SVM, and LinearSVC, ultimately choosing logistic regression for superior performance
- Implemented the TF-IDF method for feature extraction and chose logistic regression for classification, achieving a model with 0.82 average precision and 0.83 recall

Sparse Multimodal Sequential Learning Toward Micro-Video Understanding Mar. 2021 – May 2021

Dissertation

- Presented a multimodal sequential learning model with sparse coding on a micro-video classification task
- Utilized 3 parallel LSTMs to capture sequential features and applied dictionary learning for sparse representation
- Carried out controlled experiments on 20,000 samples and 22 labels with 3 other advanced baselines
- Outperformed any other baselines by an average increase of 45.9% on Micro-F and 53.3% on accuracy

Detection for Low Surface Brightness (LSB) Galaxies Apr. 2020 – Jun. 2020

Research Assistant

- Processed high-resolution astronomical images with image enhancement and channel synthesis
- Trained Darknet53 convolutional neural network within YOLOv3 framework on over 2,000 annotated samples
- Conducted comparative experiments with different hyperparameters and LSB galaxy bounding boxes
- Attained outstanding detection performance with mAP@0.5 = 93.40% and recall@0.25 = 94%

COCURRICULAR COMPETITIONS

Chinese Undergraduate Mathematical Contest in Modelling Sept. 2019

National Second Prize (Top 3%)

- Devised analytic hierarchy process and entropy weight method to evaluate index for taxi decisions
- Designed Monte Carlo simulation for dispatching strategy for taxis and passengers with fitted probability curve
- Developed data processing, analysis, and visualization programs with combination of emulation and inspection

NXP National Undergraduate Smart Racing Car Competition Jan. 2018 – Aug. 2019

Provincial Second Prize

- Constructed an automatic car capable of performing cruise, avoidance, and target tracking in a specific area.
- Programmed on ARM-based microcontrollers in C to drive the engines, cameras, and various sensors
- Applied traditional filtering methods for image segmentation and deep learning techniques for object recognition
- Implemented fuzzy PID controller and optimized it with separate integral and well-tuned parameters
- Achieved smooth beacon chasing with speed up to 3 m/s while flexibly avoiding crushing on obstacles