Feng Qingtian

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EDUCATION

National University of Singapore Singapore

Master of Science in Computer Engineering (Machine Learning Appication) Aug. 2023 - present

Laboratory: A STAR(model deployment and 3D scene understanding)

Beijing University of Posts and Telecommunications (BUPT) Beijing, P.R.China

Queen Mary University of London (QMUL) London, The United Kingdom

Bachelor of Engineering in telecommunication engineering with management(Joint Programme) Seq. 2019 - Jul. 2023

- GPA 3.58/4 IELTS: 6.5
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PROJECT EXPERIENCE

Design and implementation of cluster object detection system BUPT graduation project Oct. 2022 – May 2023

- Algorithm Development: Implemented three one-stage and three two-stage object detection algorithms based on MMDetection framework, among which Deformable Detr achieving a remarkable 46.8% MAP.
- Model Deployment: Deployed models on Jetson Nano, optimized inference time from 13.6ms to 5.9ms using TensorRT.
- Consensus Algorithm: Developed a consensus algorithm to integrate data from multiple cameras detected within a scene via a local network. Combine person re-identification algorithm with target features, resulting in an impressive 77% accuracy.

***Machine Learning* and *Deep Learning* Specialization** Stanford University (Online) Jul. 2022 – Sept. 2022

- Learned ML and DL Fundamentals: Acquired core machine learning and deep learning knowledge, applying them to diverse industry challenges. Gained proficiency in coding tools for efficient algorithm implementation.
- Evaluated Supervised Models: Conducted experiments comparing supervised models (regressions, trees) for binary/multi-class image recognition, refining model assessment skills.
- Implemented Diverse Algorithms: Developed collaborative filtering movie recommender. Implemented and assessed YOLO, GAN, LSTM, and Transformer for speech, text, and modeling applications.

Artificial Intelligence and Machine Learning National University of Singapore (Online) Jul. 2022 – Aug. 2022

- ML Fundamentals: Master core machine learning concepts, covering supervised, unsupervised, and reinforcement learning. Proficient in implementing algorithms using tools like Scikit-learn, Numpy, Pandas, and PyTorch in Python.
- Tumor Detection Models: Create classifiers for early tumor detection using health data. Develop, fine-tuned, and evaluate random forest and regularize SVM models. Achieve optimal 95% prediction accuracy with SVM on test data.
- Population Prediction Project: Led a distinguished team in a final project predicting population trends. Source, analyze, and select features from historical demographic data. Construct diverse models (linear regression, GBDT, neural networks), optimized for accuracy and efficiency. Recognize with Best Team Award and Distinction grade.

Fresh Food E-commerce Solution on WeChat Mini Program

12th Innovation Creativity Entrepreneurship Jan. 2022 - Apr. 2022

- Research and analyze the Fresh Food E-commerce market in China, including analysis of demand planning and forecasting, supply chain and logistics management. Design E-commerce functionalities to address existing challenges in the market.
- Design and build the E-commerce frontend user interface on WeChat Mini Program, including tools for product details, seller pages, shopping carts, interactive maps, customer reviews, top-selling lists etc.
- Design and build the backend data pipelines in the cloud to ingest, process, store and analyze data from various production sources accurately and efficiently.

Intelligent Medical Guidance System

BUPT College Students' Innovation and Entrepreneurship Competition May 2021 - May 2022

- Perform research on the existing challenges in patient medical experience. Design system functionalities to provide guidance of medical route in the process of patient treatment.
- Research, identify and gather data of selected hospitals, departments, doctor specialties, doctor ratings and patient records (in the format of both texts and photographs) in China from public data sources.
- Utilize Jieba in Python for data processing and mining. Build a text recognition model using Fasttext and an image recognition model using Tesseract for patient-department-doctor matching. Text model matches patient records to the target doctor with 97% accuracy; image model matches with 93% accuracy.
- Design and build a WeChat Mini Program to implement the recognition and matching algorithms, including frontend user interfaces and backend data pipelines. Deploy the program using docker onto cloud server with low memory usage and high VM resource utilization.

Intelligent Safe driving System

13th Service Outsourcing Innovation and Entrepreneurship Competition for Chinese College Students Jan. 2022 – Apr. 2022

- Build automated detection algorithms for dangerous driving behaviors. Utilize Dlib to detect behaviors such as blinking, nodding and yawning; and Yolo5 to detect smoking and phone-calling gestures. Detection accuracy exceeds 90%.
- Design and develop STM32 sensors for alcohol and distance measurements. Build an alarming system with ISD1820 and a buzzer module that sends voice alerts when alcohol concentration exceeds safe threshold.
- Build the system for real-time monitoring of the driving environment including temperature, humidity etc, with utomatic messaging functionality through SIM900A and serial communications between STM32 and Raspberry Pi.

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Carbon Sequestration Model Based on Entropy Weighting and Neural Networks

(MCM)Mathematical Contest In Modeling Feb. 2022

- Research the concepts of greenhouse effect and Carbon Sequestration. Design a decision model to help forest managers balance and optimize the various uses – social, economic and ecological - of the forests.
- Research and collect data for selected regions in China from the past three decades, including GPS locations, environmental factors, social and economic factors, seasonality impacts, forest characteristics etc.
- Utilize SPSS for data processing and construct a variety of indicators based on data. Perform indicator selection and construct the prediction model of optimal forest area using clustering analysis, entropy weighting methods, BP neural networks and genetic algorithm in Matlab. Develop carbon sequestration model to compute the model impacts.

PROFESSIONAL EXPERIENCE

AI Engineer, **Pensees Systems Pte Ltd, Singapore** Sep. 2023 - Dec. 2023

- Video Analysis (VA): Using docker, multiple VA integration frameworks for yolov5, license plate detection, and railing detection are developed based on tensorrt.
- Face recognition (FR): Develop integrated functions such as face detection, tracking, quality filtering, mask recognition, name matching, etc. based on tensorrt.
- Inference performance: Multi-channel detection is implemented. On 2080ti, the single-channel inference time for FA reaches 21.5fps, and the single-channel inference time for FR reaches 15.9fps.

AI Researcher, **Institute for AI Industry Research, Tsinghua University, Beijing** Nov.2022 - July. 2023

- Cooperate with Intel on the project 'Industrial Application of Edge Artificial Intelligence in Carbon Neutrality', utilizing edge computing and deep learning to optimize decision-making and resource scheduling in data center.
- Explored customized edge device models under resource constraints. Studied domain-aware dynamic neural networks for continuous adaptation. Investigated model quantization, pruning, and distillation effects. Explored dynamic routing, sparse networks, parameter sharing, and self-attention mechanisms for scalable models.
- Designed strategies for dynamic expert orchestration in classification and detection datasets, optimizing parameter search, computation allocation, and cache management. Achieved up to 42.34% and 18.63% reduction in memory demands and latency in respectively while maintaining accuracy drop below 3% in Swin Transformer. Paper in submission of 2024 mobicom.

AI Algorithm Engineer, **Beijing DiDi Infinity Technology and Development co., LTD, Beijing** Apr.2023 - June. 2023

- Temporal Object Detection Enhancement: Researched and implemented RNN and attention-based methods for capturing continuous frame information in temporal object detection, achieving a 2.7% accuracy improvement over baseline by introducing multiple temporal modules during feature fusion.
- Dataset Customization: Designed specialized dataloaders for bdd100k (single-frame) and bdd mot (video) datasets, emphasizing class balance to suit specific business scene recognition requirements.
- Experimentation and Validation: Conducted comprehensive experiments comparing diverse training strategies, optimizers, learning rates, temporal module placements, and parameter sharing techniques. Validated temporal effectiveness through visualization tools, sustained optimization using data augmentation, and self-attention mechanisms.

AI Product manager, **Huaxin Data Technology Co.** Jan. 2022 - Apr. 2022

- Responsible for R&D of a variety of text processing and prediction algorithms for applications in marketing strategies and automated customer chatbots. Follow emerging academic and industry trends in the AI field; prepare and present reports to support company strategic decision-making.
- Coordinate with higher management, stakeholders, and AI team to plan roadmaps, prioritize epics and funnel into development. Responsible for communicating with clients, providing technical consulting services and data reports.

AWARDS

- BUPT Outstanding Graduate June 2023
- BUPT First Prize Scholarship (Top 5%) Oct. 2022
- Municipal Prize, BUPT College Students' Innovation and Entrepreneurship Competition May 2022
- Municipal second prize, 13th Service Outsourcing Innovation and Entrepreneurship Competition May 2022
- School first prize, 12th Innovation Creativity Entrepreneurship March 2022
- H Prize, Mathematical Contest In Modeling Jan. 2022
- BUPT Third Prize Scholarship (Top 30%) Oct. 2021
- BUPT Second Prize Scholarship (Top 15%) Oct. 2020
- BUPT Merit Student Oct. 2020

SKILLS AND INTERESTS

- **Technical Skills:** Python, Pytorch, SQL, Java, C, Git, Matlab, Microsoft Office Suite
- **Activities:** International Software Development Conference, Volunteer Teaching Programs, Industrial Visiting Programs
- **Sports:** Badminton (BUPT Team Captain), Long-distance Running (BUPT Team Member), Bodybuilding, Swimming