John Ho

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Innovative Software Engineer with 3+ Years experience delivering impactful AI, Robotics, and Web solutions across diverse industries

Experience

Software Engineer, Brain Corp – San Diego, CA — Mar 2023 – Present

- Spearheaded end-to-end testing initiatives to validate and optimize navigation algorithms and sensor performance, achieving a 15% improvement in obstacle detection accuracy through rigorous nightly field tests.
- Automated over 50 test cases for shelf-scanning and cleaning robots, reducing testing time by 30+ hours per software release cycle.
- Revamped in-house test framework reporting by integrating data, logs, and results into GCP, enabling real-time updates to Slack, Jira, and Grafana dashboards, which decreased triage times by 20% and facilitated comprehensive KPI tracking.

Data Scientist Intern, 3D Systems – San Diego, CA — Jun 2022 - Sep 2022

- Designed and implemented a Node.js and Electron-based fleet-monitoring system for 3D bio-printers, reducing downtime by 30% and enhancing team productivity through real-time Grafana data visualization and log management.
- Engineered a C++ and OpenCV-powered auto-focus procedure for 3D bioprinter projectors, reducing focus time from one hour to just five minutes.

AI Specialist Intern, AppTech – Science Park, Hong Kong — Jun 2021 - Sep 2021

- Optimized deep learning vision models through post-training quantization using TensorFlow Lite and TensorRT, achieving a 75% reduction in inference latency for mobile, edge, and NVIDIA GPU deployments.
- Developed and deployed a face detection and mask classification model using PyTorch, achieving a 91% F1 score. The model was deployed across 10+ shopping malls in Hong Kong to enforce mask compliance during the pandemic.
- Built robust computer vision detection models using web-scraped data and YOLOv4 pretrained on the COCO dataset, complemented by a DeepSORT-based re-identification system for accurate people counting.

Software Engineer Intern, Risksis – Science Park, Hong Kong — Mar 2021 - Jun 2021

- Designed and implemented Python ETL pipelines to extract and analyze text from over 2,000 PDFs using OCR and NLP models (BERT and XLM-RoBERTa), storing results in MongoDB and Elasticsearch for efficient querying and retrieval.

Software Engineer Intern, ASTRI – Science Park, Hong Kong — Jun 2019 - Sep 2019

- Developed an augmented reality UWP application for the Microsoft HoloLens using Unity (C#), ROS, and WebSocket API, enabling users to interactively spawn URDF objects via hand gestures at AR tag locations.

Projects

Robust SLAM and Texture Mapping for Autonomous Vehicles [Paper]

- Engineered a 2D particle filter SLAM algorithm from scratch for autonomous vehicles, utilizing lidar, wheel encoder, and gyroscope data. Additionally implemented Kalman Filter SLAM with IMU and stereo camera data for enhanced localization accuracy.

Multi-Agent Q-Learning with GPU [Presentation]

- Developed an asynchronous parallel Q/Q-lambda learning system using C++ and CUDA, featuring a 32x32 grid environment with 128 agents learning concurrently to navigate toward a goal while avoiding 96 mines. Debugged and optimized with Nsight Profiler.

Robot Motion Planning with A* and RRT [Paper]

- Implemented search-based: A-star, ARA-star search and sample-based: rapidly-exploring random tree from scratch and analyzed their performances on challenging 2-D map environments filled with obstacles.

E2EE Terminal Chat App [GitHub]

- Created and open sourced a secure, end-to-end encrypted terminal-based chat application using Golang, gRPC, and the Signal Protocol. Established CI/CD workflows to deploy the server on AWS and distribute client binaries via GitHub Releases.

ProApply.AI [Visit Website]

- Founded and developed a SaaS web platform leveraging LLMs to generate personalized job application documents, including cover letters, attracting over 50 paying users and significantly streamlining the job application process.

Fault Tolerant Surfstore with RAFT [GitHub]

- Designed and implemented a fault-tolerant, scalable file synchronization system using Golang and gRPC. Utilized the RAFT consensus algorithm for metadata consistency and consistent hashing for efficient load balancing across distributed blockstores.

Skills

Languages: Python, Golang, C/C++, TypeScript, Java, C#, SQL, CUDA, Markdown, Bash
Technologies: Git, Linux, Docker, Kubernetes, PyTorch, TensorFlow, OpenCV, GitHub Actions
Big Data/ML/Cloud Frameworks: PySpark, PyTorch, LangChain, Pandera, Pydantic, TensorFlow, Scikit-learn, AWS (S3, DynamoDB, RDS, EC2, ECS), Google Cloud (Firestore, Cloud Storage, BigQuery), SQL, R, Mercurial
Domain Knowledge: ETL, Data Mining, Data Modeling, Data Visualization, Data Analysis, MapReduce, Operating Systems, Databases, Computer Networking, Natural Language Processing, Machine Learning, IoT, Robotics, Project Management, CI/CD

Education

University of California, San Diego

M.S. in Intelligent Systems, Robotics & Control — *Mar 2023 | La Jolla, CA*

- **Research Assistant**, UCSD Advanced Robotics and Controls Lab
  Leveraged TensorFlow and MaskRCNN to detect and segment tumors in DICOM lung images.

B.S. in Electrical Engineering – Machine Learning & Control — *Jun 2021 | La Jolla, CA*

- **Member**, UCSD Triton Unmanned Aerial Systems (UAS)
  Contributed to the embedded (antenna tracker) and software (backend) teams.
- Warren College Provost Honors (3 quarters)