Ping-Chun Tsai (Joseph Tsai)

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Work Experience

BTRU; London, UK   *Software Develop Engineer*   Sep 2023 – Present

- Semantic medical knowledge base extraction system: Agent with Fine tune LLM, Prompt eng, data labeling to Developing Retrieval-Augmented Generation (RAG) architecture to enhance data processing indexing for Precise accurate results.
- Cloud & Event driven Architecture: Designing scalable fault tolerant system on AWS. Configured secure auth with Cognito & Certificate Manager, use of AWS S3, Lambda, API Gateway, DynamoDB, and CloudFront to build efficient web applications. DNS config via Amazon Route53.

Dnanudge; London, UK   *Embedded Software Engineer*   Nov 2020 – Sep 2023

- Nudge wearable: Designed next generation PCB in Altium Designer; Integrated I2C sensor and optimized Signal Routing; The PCB design is Manufacturer DRC(design rules clean); Contributed 30% Bluetooth protocol definition & pivot rule in sensor driver/application using Embedded IAR workbench.
- Nudgebox Firmware development: Design and developing wireless (Ble/Wifi) Api that connect to user app and cloud server. Maintain firmware feature update with customer requirements.
- Nudgebean wearable FW development: Design and developing wireless (Ble) Api that connect to user app. Flash Memory Data structure mapping/management/maintain.
- Nudgebox application Software: Architecting and implementing in Python QT; UI interface in QML development; It provides full control of Nudgebox equipments with debug/analyze/design protocol/Real-time sensor; Internal R&D and technician teams use it to control/debug experiments with Nudgebox equipment;
- Nudge Evaluation Script in AWS Lambda: Core development of algorithm/scripting; Integrated Github CI/CD in AWS Lambda; Generate post-analytic reports in AWS S3&DynamoDB table used by the R&D team to assess performance and diagnose issues; The Lambda Eval script processed more than 10k PCR test during covid peak;
- Lab R&D Server: Architecting and implementing in Node.JS; Design configurable scaleup structure with multi-threading technique; The server handled hundreds of End point Nudgebox equipment's; It enables Real-time runtime monitoring and data Access in a User Front-end portal developed in EJS.
- Created various data analytics tools/scripts enhanced the debugging process for R&D and scientist used.
- The Eval. Script, R&D Server and Nudgebox App. software relevant skill ware learn since join Dnanudge

Skills

AWS, Python, C/C++, Java Script, QT, Node.js, PlatformIO, Altium, IAR Embedded workbench

Education

University of Southampton   Sep 2019 - Nov2020
- Msc Artificial intelligent   Grade: Pass

University of Liverpool John Moors   Sep 2015 - Jun 2019
- BEng Computer Technology   Grade: First Class

Relevant coursework:

Artificial intelligent, Robotic, Embedded Systems, DSP, Machine learning, Evolution Complexity, Deep Learning

PROJECTS

Autonomous Guidance System Platform Design for All-Terrain Robot (MSC Project)   May 2020 - Oct 2020

- Design a computer vision based guidance system with the opensource software and hardware.
- Features of low-cost and robustness under different environments base on raspberry pi Zero & OpenCv lib.
- Estimating and extrapolating paths to efficient manage various detection failure scenarios in task manager

NLP with Disaster Tweets (Kaggle Machine Learning Competition Project)   Fed 2020 - May 2020

- Train a model to use programmatically monitoring the social media to announce an emergency in real time.
- Use NLTK natural language toolkit for feature extraction, world embedding and language processing.
- Develop different models such as cosine similarity, dummy, knn, ramdom forest, svm to analysis performance

DAC Tube Amplifier (Individuals Project)   Jun 2019 - Sep 2019

- Designed DAC Tube amplifier for Hi-Res device. based on Krog NuTube & PCM DAC.
- Separate power supply design: D/A circuit, L&R channel & crystal oscillator, to achieve noiseless signal.