Yan-Cheng (Bill) Hsu

Full-Stack Software Engineer / Machine Learning Engineer

| Personal Website | Gmail | LinkedIn | Github | Google Scholar |

EDUCATION

M.S., *Computer Science*, UC San Diego — Dec. 2022
Courses: Distributed System, Database Implementation, Recommendation System, Natural Language Processing, Computer Vision

B.S., *Electrical Engineering*, National Central University — 2017 – 2020
Courses: Data Structure and Algorithm, Operating System, Computer Organization — GPA: 3.97/4.00

PUBLICATIONS

Hsu, Yan-Cheng; Li, Yung-Hui; Chang, Ching-Chun; Harfiya, Latifa N. 2020. "*Generalized Deep Neural Network Model for Cuffless Blood Pressure Estimation with Photoplethysmogram Signal Only.*" *Sensors* 20, no. 19: 5668. *System Overview*, *doi*, *github*

WORK EXPERIENCES

Software Dev Engineer Intern: Amazon, Alexa Org, SEA, U.S. — Jun. 2022 – Sep. 2022
Full-Stack Project: SensAI Self-Service Onboarding Platform (*Secure AI/ML Platform, Typescript, Node.js, Javascript/CSS/HTML, React.js, Git, VersionSet, CI/CD, Pipeline, AWS-CDK, AWS-SDK*) *(Return Offer Rescinded)*

- ✓ Designed, implemented and deployed SensAI Self-service Onboarding system and saved ~93.75% of onboarding time per APP/API (4 hrs/APP|API v.s. 15 mins/APP|API) for teams in *Alexa Org*. *pptx*
- ✓ Designed and implemented Auto-Verification, Canaries, Access Control and Monitoring modules for Self-Service Onboarding System with AWS-CDK and AWS-SDK (Lambda, CloudWatch, S3, DynamoDB, IAM, Brass and Bindle) on Node.js frameworks
- ✓ Modified original webUI on React.js to enhance the self-serviceability of the onboarding system

Software Engineer Intern: Wiwynn Inc (Acer's Child Company), Taipei.TW — Jul. 2021 – Aug. 2021
Prometheus Infrastructure Testing Data Analysis and Software Toolkit Development (*Python, SQL, Git, CI/CD, Python Unit Testing, Prometheus, Large Scale Database, Temporal Data Analysis*)

- ✓ Established and implemented a prototype data pipeline for production line testing data analysis
- ✓ Delivered 3 fully documented and unit-tested Python packages for collecting, aligning, and analyzing both temporal infrastructure's hardware data (Prometheus) and production line testing data in different databases
- ✓ Reduced and redefined the scope of production line performance enhancement problem to roughly 0.34x

Software Research Assistant: MLBR Laboratory (National Central University), Taoyuan.TW — Dec. 2019 – Sep. 2020
Cuffless Deep-Neural-Network Blood Pressure Predictor by Introducing a New Statistical Feature Selection Algorithm (*Python, Keras, Tensorflow, CUDA, Pytorch, Statistics, Algorithm, Data Science*)

- ✓ Delivered and designed a deep learning blood pressure estimation model from scratch including temporal data preprocessing, neural network selection, and design of physiological feature selection algorithm with Mean Absolute Error (MAE) equal to 2.73 mmHg over 2.5M+ cardiac cycles collected from 9000 patients by introducing a new physiological feature selection algorithm
- ✓ Incorporated ~6x more data into the new model and made the model ~1.8x more accurate compared to the existing model

Software Research Intern: BioEE Laboratory, UCSD.US — July. 2019 – Aug. 2019

SOFTWARE PROJECTS

My Personal Websites From Scratch (*HTML/CSS/Javascript, AWS EC2, Cloudfront, ACM, S3, Route53, Docker Compose, Nginx, Git, Distributed System)* — Feb. 2022 – Present

- ✓ Automatically deployed the web server to AWS EC2 instance through git, Nginx and docker hub. *System Overview* , *github*
- ✓ Deployed my encrypted 2nd website with serverless framework (AWS Route53, Cloudfront, Cloudformation, S3, ACM) and saved ~40% of operating costs per month (50 USD/month v.s 30 USD/month). *System Overview*, *website*, *github*

File Sharing System *(Golang, Docker Compose, Git, Distributed System, File System, gRPC, TCP/IP)* — Winter. 2022

- ✓ Delivered a web server handling get requests and responses without the help of net/http package
- ✓ Designed and implemented a simple file sharing system (meta-service + block-service) that allows users to synchronize their file changes through gRPC

Recommender System Rating Prediction (*Python, Tensorflow, Latent Factor Model*) — Fall. 2021

- ✓ Designed a latent factor rating prediction model with tensorflow and achieved top 5% (25/552) performance in the class
- ✓ Incorporated the latent factor model with deep residual network as an ensembled prediction model with Mean Square Error (MSE) equal to 0.83 over 500,000 shopping records

Computer Vision Projects(*Python, Pytorch, Skimage, Scipy, OpenCV, Singular Vector Decomposition*) — Fall. 2021

- ✓ Implemented edge detection and corner detection from scratch with Non-maximum Suppression and Hypothesis Thresholding. *github*
- ✓ Implemented partially and completely bounded camera rectification with epipolar geometry from scratch. *github*
- ✓ Designed and implemented SIFT feature matching with fundamental metrics computed with epipolar geometry and RANSAC. github

Buffer Manager and B+ Tree Indexing System (*C/C++, B+ Tree, Clock Algorithm, Backtracking, Recursion*) — Spring. 2022

- ✓ Designed and implemented a clock-algorithm-based buffer manager and a B+ Tree Indexing system with insert, split and range search functions from scratch for a file system. *github*

SKILLS

Programming Language: Python, Typescript, Golang, Javascript/CSS/HTML, C/C++, SQL/PromQL
Frameworks: Node.js, React.js, Git, VersionSet, GitLab CI/CD, Pipeline, Docker, Docker Compose, Nginx, gRPC, Prometheus
AWS-CDK/AWS-SDK: EC2, Lambda, IAM, CloudWatch Metrics and Alarms, S3, DynamoDB, Cloudfront, Cloudformation, ACM
ML/DL Toolkits: Keras, Tensorflow, Pytorch, Sklearn, Skimage, Surprise, Scipy, OpenCV, CUDA