BIN-RUEI WU

Seeking a full time software engineering job

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EDUCATION

National Taiwan University
Taipei Taiwan, Aug 2019 – Sep 2021

M.S. degree in Communication Engineering — **GPA: 4.15/4.3**

- Focus on machine learning and IoT, especially unsupervised learning and computer vision.
- Related courses : Computer Vision, Human Language Processing, Data Science, IoT Application System, Operating Systems.

Zhejiang University University
Hangzhou China, Feb 2019 – Jul 2019

ES. College of Computer Science and Technology — **GPA: 4.03/4.3**

National Chiao-Tung University
Hsinchu Taiwan, Sep 2015 – Feb 2019

B.S. degree in Electrical and Computer Engineering — **GPA: 3.85/4.3**

WORK & TOPIC EXPERIENCE

MediaTek Computing-AI platform

System Software Engineer

Nov 2021 – Present Taipei

AI SDK.

- Model Auto-tiling and semi-auto-tiling mechanism enhancement. Remove redundant pipeline commands. Improve the u-rate between multi-level cache & processing-engines. Enhance average 30% IP-time among complex graph models.
- Focus on out-standing performance & low power consumption. Optimize the generated commands to reduce models inference time.
- Take an custom's key feature as example. Improve performance to 1.4X faster and reduce 50% extra power consumption in custom's key feature, and make a distinct advantage over competitors.

Inference framework development.

- VPU(DSP) backend development.
- Optimize device inference flow, reduce sw overheads and resolve critical paths. Implement caching mechanism to reduce pre-processing at every frame, reduce 90% of inference sw-overheads.
- Framework memory management optimization, refine buffer allocate strategy reducing 30% model loading time. Framework inference flow refinements, apply lazy load mechanism reducing 80% memory footprints.
- On going framework architecture refactor. To reduce almost 100% initialization time and 50% of inference sw-overheads. Also relax many unreachable constraints.

Team Tool Development.

- Develop wxWidgets GUI tool to measure AI feature performance & power automatically. Saving more than 90% human instrument manipulating times during measurements.

Custom support - key feature landing.

- Vivo X80 extremely low-lighted AINR [web] [youku]
- Vivo X90 S17 bokeh / skinsoften / colorstyle, facebeauty models.

AI SDK | Inference | Low-Power

SKILLS

- C/C++, Python, JS, Solidty.
- AI SDK, Inference framework, APU arch, VPU(DSP) backend.
- Machine Learning, Deep Learning, Unsupervised Learning, CV, NLP.
- GUI (wxWidgets), Web Frontend (React, Bootstrap) & Backend (Django/Express/Apache).

LANGUAGES

Chinese — Native

English — GEPT (High-Intermediate)

OTHER INTERESTS

Baseball | Swimming | 3C

WORK EXPERIENCE

MediaTek

System Software Engineer

Nov 2021 – Present

- AI SDK & Inference framework development.
- Custom support - Low power AI feature landing.

NTU

Teaching Assistant / Lecturer

Sep 2020 – Jan 2021

- Data science course teaching assistant.
- Introduction to computer science teaching asistant & lecturer.
- Xilinx FPGA HLS workshop lecturer.

Block Chain Team

R&D engineer

Dec 2017 – Jan 2019

- Develop Ethereum-based block chain token (ERC-20, ERC-223, ERC-721).
- Our customers: Mr Ding Ding (Ding), Caullix bank (USDCX), panda land (Panda)

WORK & TOPIC EXPERIENCE

Graduation Institution

Data Science and Intellegent Network Group

Aug 2019 – Sep 2021 NTU, Taipei

Unsupervised Community-consensus Contrastive Clustering (graduate research) Sep 2020 – May 2021

- We proposed a new CCCLoss and a one-staged clustering framework that can prevent contrastive model from collapse problem.
- Experimental results show that we can achieve the state-of-the-arts performance on 6 benchmark datasets.
- [paper]
- Unsupervised Learning | Deep Learning | AI

Epistemology+ (project) May 2021 – Aug 2021

- Developed a question and answer website.
- Full stack development with React, GraphQL and Node.js.
- [web] [youtube]
- React | GraphQL | Node.js | Web

HOHOHO intracranial HemOrrHage detectiOn enHenced by asymmetric lOss with CNN-LSTM (project) Dec 2020 – Jan 2021

- Detecting 5 kinds of cerebral hemorrhages: Intracerebral hemorrhage (ICH), Intraventricular hemorrhage (IVH), Subarachnoid hemorrhage (SAH), Subdural hemorrhage (SDH), Epidural hemorrhage (EDH).
- [paper]
- Smart Medical | Deep Learning | AI

Efficient Two-Stream Action Recognition on FPGA (lab project) Sep 2019 – Sep 2020

- We implement a two-stream VGG-7 action recognition model and port 8-bits quantized weight onto FPGA.
- Implementated with Vivado HLS 2019.1 on ZCU102.
- [paper] [youtube] [github]
- FPGA | Vivado HLS | Edge-AI | CVPR-Workshop ECV2021

Cinnamon - Document Information Extraction (project) Sep 2019 – Feb 2020

- The challenge of shared tasks is mainly focused on information extraction, which is similar to the NER(Named Entity Recognition) task in NLP.
- Bert model prediction.
- [report] [youtube] [github]
- NLP | AI | DS

See Motion in the dark (Extremely low-light Video Processing) Sep 2019 – Feb 2020

- Brighten extremely low-light videos.
- Implement two models utilizing Conv-LSTM and 3DCNN respectively.
- [report] [youtube] [github]
- Computer Vision | Deep Learning | AI

ACHIEVEMENTS

Ministry of Education - AI cups 2019
Top 25% for the 2019 AI CUP Artificial Intelligence Analysis and Classification of Thesis(Tagging of Thesis) [Dec 2019]

18th MACRONIX Golden Silicon Awards
MACRONIX Golden Silicon Awards is an semiconductor design and application competition. Our project: Soil battery - fish tank and potted plant was honour to get this award. [Mar 2018]

Ministry of Education - Innovation and entrepreneurship project: Blockchain creation fundraising platform
Our business proposal was selected as top-20 innovative and entrepreneurship project in 2018 on universal venture proposal at Ministry of Education. [Mar 2018]

Calculus Competition Ranking 20
Calculus competition 2015FALL in NCTU, I rank first 20 of 1212 competitors. [Jun 2016]