Yu-Fan (Bernie) Teng

Mail: bernieeeyufan@gmail.com | Phone: +886-978179982
Personal Website: BernieTeng.github.io

RESEARCH INTEREST

Integrated Circuit (IC) Design; Architecture and Embedded Systems; Deep learning application in Computer Vision

EDUCATION

National Taiwan University (NTU) *Taipei, Taiwan*

Bachelor of Science in Electrical Engineering (NTUEE) *09/2016 – 01/2021*

- CGPA: 3.7/4.0; Last 60 GPA: 3.97/4.0
- Selected Courses: Integrated Circuit Design (A), Digital System Design (A), Digital Circuits Lab (A), Integrated Circuit Design Lab (A), Electronic Circuits (A), Electronic Circuits Experiment (A)

RESEARCH EXPERIENCE

Microsystem Research Lab, NTU *(Advisor: Prof. Tzi-Dar Chiueh)* *Taipei, Taiwan*

Undergraduate Research Student *02/2019 – 09/2020*

Topic 1: Digital signal processor taped-out IC [link]

- Implemented the whole IC design process from simulation to **taped-out IC**, including Matlab simulation, RTL, P&R, and DRC/LVS.
- Designed an adaptive FIR filter chip as an equalizer to eliminate the noises (Accuracy: 99 percent)

Topic 2: FloatSD machine learning acceleration hardware solution [link]

- Designed an efficient dataflow of FloatSD to reduce memory access
- Developed hardware format of dropout and batch normalization to accelerate the training process of CNN

Media IC and System Lab, NTU *(Advisor: Prof. Shao-Yi, Chien)* *Taipei, Taiwan*

Undergraduate Research Student *09/2018 – 01/2020*

Topic: Deep learning tracking algorithm for multiple object tracking

- Developed novel siamese deep learning tracking algorithm to track and tag multiple objects
- Applied it on **2019 CVPR Multiple Object Tracking Contest**

Digital System Design Course *(Instructor: Prof. An-Yeu Wu)* *Taipei, Taiwan*

Teaching Assistant *01/2020 – 06/2020*

- Prepared MIPS/RISC V class materials for students and optimized student's MIPS baseline homework
- Wrote a script in Bash and Python to grade student's homework automatically

WORK EXPERIENCE [link]

McKinsey & Company *Taipei, Taiwan*

Analyst Intern | Design to Value Team *07/2020 – Present*

- Analyze client's product using teardown analysis and cleansheet modeling
- Solved 11 client cases with global consultants

DBS Bank *Taipei, Taiwan*

T&O Support Analyst | Technology and Operation Team *02/2020 – 03/2020*

- Analyzed data for business analysis team by developing automatic comparison program in Python and Qlikview SQL
- Developed strategy for Iserve system call issue with banking team and credit card team

Intel Corporation *Taipei, Taiwan*

Hardware Engineer Intern | Non-Volatile Solutions Memory Team *06/2019 – 01/2020*

- Supported NVMe SSD system-level validation and integration for Client SSD
- Designed automated hardware validation tools in Python for SSD firmware and improved the efficiency of validation by 50 percent
- Cooperated with the top laptop brand and leading SSD controller companies to analyze SSD failure

Ganzin Technology *Taipei, Taiwan*

Product Development Engineer Intern | Eye-tracker Development Team *09/2018 – 06/2019*

- Won second place at Taiwan Pitch Night
- Developed a light detection application project of eye-tracker, and exhibited on **COMPUTEX/INNOVEX 2019**

PUBLICATION [link]

Under review (1st author)

- **Yu-Fan Teng***, Yu-Sheng Ting*, Tzi-Dar Chiueh, "Batch Normalization Processor Design for Convolution Neural Network Training and Inference", *Submitted to **2021 IEEE International Symposium on Circuits and Systems (ISCAS)***

* Indicates equal contribution

CONTEST AND AWARD [link]

NTU Outstanding Performance Award — *Taipei, Taiwan*
15 out of 7000+ Students at NTU (USD 3,300) — *10/2020*

- Honored of academic and research excellence at National Taiwan University

Undergraduate Innovation Award — *Taipei, Taiwan*
Second Prize — *07/2020*

- Proposed our research on Batch Normalization Processor Hardware Design

National IC Design Contest — *Hsinchu, Taiwan*
Third Place (Among 100+ teams) — *07/2020*

- Represented NTU in the national competition held by the Ministry of Education and won the 3rd place

MakeNTU (The largest nationwide hardware hackathon) — *Taipei, Taiwan*
Cathay Financial Holding Business Award (USD 1,600) — *05/2019*

- Used techniques such as RPI, CNN, SVM, and Azure (Microsoft) to create a Supermarket AI Assistant

LEADERSHIP ROLES

Startup – GoGet [link] — *Taipei, Taiwan*
Co-Founder & Web developer — *11/2019 – Present*

- Founded with workers from McKinsey, BCG, Shopee, and Microsoft
- An online platform for college students and startup companies to find expertise to deal with their current project problems and find partners, and 1000+ users per week, still increasing
- Cooperated with Microsoft Taiwan to promote programming courses for interdisciplinary learning

NTUEE Badminton Team — *Taipei, Taiwan*
Captain — *05/2018 – 05/2019*

- Managed the whole team with nearly 70 people and won the 2018 North Taiwan EE Cup Champion

NTUEE Camp — *Taipei, Taiwan*
Leader of the event planning department — *08/2017*

- Organized the whole activities with 100 +workers; activities included visiting Google and NVIDIA headquarters

Sea Group and Garena World Overseas Visit Program — *Singapore and Thailand*
Delegate — *09/2019*

- Selected as one of the 20 representatives of Taoyuan City from 1000+ candidates.
- Visited 7 startup companies; learned and exchanged ideas from CTO in Sea Group Singapore and PM in Garena Thailand.

SELECTED PROJECTS

Automatic Musical Note Player on FPGA | *Digital Circuit Lab (EE3016)* [link]

- Designed an automatic music player in System Verilog on FPGA, which integrated image and audio processing to identify musical notes
- Integrated FPGA peripheral modules, such as Arduino joystick and VGA image display and TRDB-D5M camera.

Distributed Training on Multi-GPUs Platform | *Independent project*

- Integrated GPipe's pipeline using PipeDram's algorithm for training process of ResNet and AlexNet
- Increased the largest training throughput by 133% on 8 GPUs

Pipelined MIPS CPU | *Digital System Design (EE4010)* [link]

- Implemented 5-stage pipelined MIPS with branch prediction, layer-2 cache, and multiplier & divider unit
- Ranked 1st place in terms of area and timing in final project

SKILLS

Programming Languages: Python, C++, Verilog/System Verilog, Matlab, Assembly | **ISAs:** RISC-V, MIPS, Arm
VLSI Design Tools: NC-Verilog, Design Compiler, Innovus, Verdi, Virtuoso | **ML Frameworks:** PyTorch, Keras, TensorFlow