

Po-Shao Chen

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RESEARCH INTEREST

Energy efficient hardware accelerator for digital signal processing, machine learning, or bioinformatics

EDUCATION

Master of Science in Electronics Engineering

Sep. 2018 – Feb. 2021

National Taiwan University

Taipei, Taiwan

- Thesis: An Energy-Efficient Accelerator IC for Dark Channel Prior Based Blind Image Deblurring
- Advisor: Prof. Chia-Hsiang Yang
- GPA: 3.98/ 4.30

Bachelor of Science in Electrical Engineering

Sep. 2014 – June 2018

National Taiwan University

Taipei, Taiwan

- GPA: 3.24/ 4.30

PUBLICATIONS

P.-S. Chen, Y.-L. Chen, Y.-C. Lee, Z.-S. Fu, and C.-H. Yang, "A 28.8mW Accelerator IC for Dark Channel Prior Based Blind Image Deblurring," *IEEE Asian Solid-State Circuits Conference (A-SSCC)*, Nov. 2021.

HONORS & AWARDS

Bronze Medal Award, Macronix Golden Silicon Award

Aug. 2021

- Served as a team leader and competed with 200+ teams

RESEARCH & WORK EXPERIENCE

Research Assistant

Aug. 2021 – Present

Digital Circuits and Systems Lab, National Taiwan University

Taipei, Taiwan

- Advisor: Prof. Chia-Hsiang Yang
- Delivered the oral presentation for blind image deblurring accelerator IC in *A-SSCC* 2021

Mandatory Military Service

Apr. 2021 – July 2021

R.O.C. Army

Taiwan

- Received rifleman's and tank ammunition loader's training

Graduate Student Researcher

July 2018 – Mar. 2021

Digital Circuits and Systems Lab, National Taiwan University

Taipei, Taiwan

- Advisor: Prof. Chia-Hsiang Yang
- Designed blind image deblurring accelerator IC with **complete cell-based ASIC design flow**
- Applied the deblurring accelerator to Intel FPGA board for surgical image deblurring
- Implemented the algorithm for efficiently analyzing current signals from the sensor measuring the alcohol in gaseous state to determine the concentration

Undergraduate Student Researcher

Mar. 2018 – June 2018

Digital Circuits and Systems Lab, National Taiwan University

Taipei, Taiwan

- Advisor: Prof. Chia-Hsiang Yang
- Analyzed blind image deblurring algorithms

Electrical Engineering Intern

July 2017 – July 2018

HP Inc.

Taipei, Taiwan

- Designed compact WLAN antenna for the narrower bezel laptop
- Applied Visual Basic for Application (VBA) in Excel to collect the WLAN antenna field trials' data and generate charts automatically
- Participated in the live stream for introducing the internship program

SELECTED PROJECTS

- Blind Image Deblurring Accelerator IC** Sep. 2018 – Feb. 2021
- Implemented the chip having 2562x acceleration in full-HD image deblurring compared to Intel i7-4790
 - Achieved 4x higher normalized area efficiency and 7.5x higher normalized energy efficiency than the prior design
 - Used less area than the state-of-the-art design despite supporting 4x larger image size and better capability of image deblurring
- Gas Concentration Analysis** Sep. 2018 – Dec. 2020
- Designed digital filters for raw signals from gas sensor with MATLAB
 - Analyzed signals' patterns and constructed ideal signals to aid detection
 - Reduced the run-time by 50% for gas concentration detection with remained accuracy
- Stereo Matching** Sep. 2018 – Dec. 2020
- Explored and implemented different algorithms to have the feasible stereo matching performance
 - Modified algorithms with various pre-processing and post-processing methods to enhance stereo matching results
- Webcam Controlled by Electrooculography (EOG) Signal** Nov. 2016 – Jan. 2017
- Implemented the multi-stage filter circuit for EOG signals filtering
 - Applied EOG signals to control the movement of the webcam and displayed the live stream video from the webcam on the screen with Arduino board

SKILLS

Programming Language: Verilog, MATLAB, Python, C/C++, Latex
Hardware Design Tools: NC-verilog, Verdi/nWave, Design Compiler, Innovus, Calibre, Altera Quartus

EXTRACURRICULAR ACTIVITIES

- Treasurer of Tainan Alumni Association** Sep. 2014 – Aug. 2016
National Taiwan University *Taipei, Taiwan*
- Contacted shops of famous Tainan street food and coordinated purchases for Fucheng Week (an event for promoting Tainan's delicious food and earning funds for the association)
 - Supervised the income and the expenditure of the club
 - Applied for reimbursement of club activities' expense
- Electrical Engineering Department Volleyball Team** Sep. 2014 – Jun. 2018
National Taiwan University *Taipei, Taiwan*
- Varsity Kendo Team** Dec. 2014 – July 2015
National Taiwan University *Taipei, Taiwan*

REFERENCES

- Prof. Chia-Hsiang Yang**
- Professor, Department of Electrical Engineering
 - National Taiwan University
 - Email: chyee@ntu.edu.tw
- Prof. Shao-Yi Chien**
- Professor, Department of Electrical Engineering
 - National Taiwan University
 - Email: sychien@ntu.edu.tw
- Dr. Chien-Pai Lai**
- Wireless Architecture Manager at HP Communications Technology
 - HP Inc.
 - Email: pai.lai@hp.com