Christine Wu

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EDUCATION

Bachelor of Science in Computer Engineering
University of Illinois at Urbana-Champaign — Graduated: ***May 2021***

- Thesis title: "Overcoming optical scattering in photoacoustic imaging with intensity-recovering deep learning model"
  Advisor: Yun-Sheng Chen (Department of ECE and BioE)
- UIUC ***Dean's List*** and recipient of the ***John Deere Foundation WECE Scholarship*** for high academic standing

REASEARCH INTERESTS

My research interest is to interweave fundamental concepts of Machine Learning with interdisciplinary knowledge, design intelligent algorithms and systems, and develop scalable optimization tools. Through improvements in computation, I wish to apply them in healthcare and medicine to create portable and accessible products that can assist working medical professionals.

RESEARCH EXPERIENCES

UIUC-YSChen Lab, *Urbana, IL*
PhD Student Research Assistant | MATLAB, Python, PyTorch, CUDA — ***November 2019 – Current***

- Collaborate with Google Researcher on Google Cloud Platform to design the dataflow and convolutional layers to perform the image-to-image translation between ultrasound and photoacoustic images, overcoming short penetration depth of light waves
- Integrated cGAN with laser information input layer and incorporated a SSIM loss function and a pre-trained laser intensity estimator NN to create a robust PowerNet that generates uniform intensity photoacoustic images with limited optical scattering
- Design and construct an automated workflow to pre-process, train, validate, and post evaluate medical data, including active snake contour method to remove skin layer and CW-SSIM to post-evaluate images

National Cheng Kung University-Media SoC Laboratory, *Tainan, Taiwan*
Machine Learning Research Assistant | Keras, Python, C — ***May 2020 – Current***

- Assist Professor Lee in designing the workflow and C code of a portable melanoma skin cancer detector that classifies melasma dendritic level through mobile devices
- Consult effectively with dermatopathologists from Kaohsiung Medical University to obtain important pathological information to formulate a contour snaking algorithm that identifies cytoplasm boundary of dead skin cells for cytoplasm segmentation

CONFERENCE & SYMPOSIUM PRESENTATIONS

Oral Symposium Presentations

Wu, C. S., Chen, Y. (2021, May). *Overcoming optical scattering in photoacoustic imaging with intensity-recovering deep learning model.* UIUC Undergraduate Research Symposium, Urbana, IL.

Oral Conference Presentations

Huang, K. C., **Wu, C. S.**, Zhao, Y., Chen, Y. (2022, Jan). *Photoacoustic deep tissue imaging enhanced by ultrasound-guided deep convolution neural networks.* Session 13: Machine Learning: Developments and Applications, SPIE Conference: Photons Plus Ultrasound: Imaging and Sensing 2022, San Francisco, CA.

WORK EXPERIENCE

Housing Residential Technology Services, *Urbana, IL*
Computer Consultant Coordinator — ***January 2018 – May 2021***

- Establish credibility by communicating complex problems professionally and productively to the IT Technical Associate
- Supervise 32 Peer Computer Consultants to troubleshoot residents' technology issues on both MACS and MS/Windows
- Orchestrate a yearly 3-day training to walkthrough common issues and respective solutions to maintain a group of well-equipped staff for an efficient academic environment at housing computer labs

VOLUNTEER & LEADERSHIP EXPERIENCE

Women in Electrical Computer Engineering | *Urbana, IL*
Member of Tech Committee — ***January 2018 – May 2019***

- Plan workshops for soldering, Arduino, and GitHub to expand tools for fellow WECE members
- Maintain fluency in multiple tools such as Vim, Raspberry Pi, Arduino, and Git when preparing for workshops

VOLUNTEER & LEADERSHIP EXPERIENCE CONTINUED

Guatemala Engineering Service | *Antigua, Guatemala* ***December 2017 – January 2018***

- Engineer and construct housing for a local family, setting up the water system and electricity for bathroom and kitchen
- Analyze cultural differences, while becoming more open-minded when approaching issues and solving problems

PROJECTS

Operating System | x86 Assembly & C

- Develop an operating system based on simplified interfaces through reading Linux Kernel Specifications in protected mode
- Set up the basics: interrupt and global descriptor tables, paging, real-time clock, device interrupt and exceptions handling
- Devise the functionality and integrations of system call, multiple terminals, and basic scheduling to handle at most 10 system calls; provide support for six tasks from program images in the file system
- Generate adequate test cases for each component to isolate design and coding bugs

Dozen-Duty Web Application | HTML & Python & SQL & MongoDB

- Design a web application for a "household" to 1) assign and manage chores equally, 2) suggest grocery items based on buying frequency and diet healthiness, and 3) keep track of money debts between group members
- Implement triggers to insert, update, delete tables automatically, and query the database with raw SQL and NoSQL commands

TECHNICAL SKILLS

- Programming: Java, Python, C++, C, System Verilog, C#, JavaScript
- Tools: git, AWS, MySQL, mongoDB, HTML, Google Cloud Platform, MATLAB, PyTorch, FPGA, Quartus

COURSEWORK

- Machine Learning, Artificial Intelligence, Probability-Statistics
- Analog Signal Processing, Digital Signal Processing,
- Data Structures & Algorithms, Computer Systems & Architecture
- Mobile Computing & Localization, Database Systems
- Digital Systems Laboratory, Microprocessor, System-On-Chip
- Biosensors, Neural Circuits and Systems

REFERENCES

Brian T. Cunningham, Professor and MNTL Director
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Department of Bioengineering
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