PHYLLIS ANG

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EDUCATION

MS in Computer Science 2019 - 2022
Duke University, *Durham, NC*

Bachelor of Science in Electrical and Computer Engineering – *with Honors* 2015 - 2019
The University of Texas at Austin, *Austin, TX*

INDUSTRY EXPERIENCE

GPU Architecture Intern - *Nvidia* May 2021 – Aug. 2021

- Created multi-process system infrastructure that allowed for communication between hybrid CPU-GPU processes
- Implemented byte-alignment fix in GPU modeling that allowed for accesses of varying sizes at different addresses
- Automated the workflow in a multi-processes system by generating a Python script that managed launching processes as well as intercommunication and interconnections

RESEARCH EXPERIENCE

Graduate Research Assistant – *Apex Lab* Aug. 2019 - Present
Advisor: Lisa Wu Wills

- Characterize efficiency vs accuracy metrics trade-off for long-sequence Natural Language Processing (NLP) models using PyTorch
- Analyze compiler techniques used by Vivado HLS to generate the hardware designs for accelerable kernels
- Explore hardware and software optimization techniques to implement an optimized hardware design for matrix multiply using Chisel and Scala
- Improved upon the startup cost of using a hardware accelerator composer framework by generating comprehensive guides and automating compiling processes using Bash Scripts

REU Research Assistant - *Adaptive Parallel Real-Time Computing* Jun. 2018 – Aug. 2018
Advisor: Christopher Gill

- Incorporated parallel real-time tasks into elastic scheduling model
- Designed Python script to create synthetic parallel adaptive period and adaptive workload tasksets
- Analyzed CPU behavior using KernelShark to verify CPU reallocation according to the elastic scheduling model
- Validated the functional equivalence of period elastic and workload elastic tasksets

Undergraduate Research Assistant - *NanoBiosensors and Molecular Tracking Lab* Jun. 2016 – Jan. 2019
Advisor: Tim Yeh

- Conducted stimulated emission depletion (STED) experiments using a 3D particle tracking microscope
- Developed two-particle tracking experiments for a spatially resolved florescence correlation microscope
- Modified a 3D particle tracking microscope to develop a dual-color tracking technique to monitor DNA dynamics
- Explored the dynamics of a double-stranded DNA containing a variety of DNA modifications
- Wrote Matlab code to process data obtained from 3D particle tracking microscope

PUBLICATIONS

[1] **P. Ang**, B. Dhingra, L. Wu Wills, " Characterizing the Efficiency vs Accuracy Trade-off for Long-Context NLP Models," *ACL NLP-Power 2022*. Under Review.

[2] Y.L. Liu, E.P. Perillo, **P. Ang**, M. Kim, D.T. Nguyen, K. Blocher, Y.A. Chen, C. Liu, A. Hassan, H. Vu, A.K. Dunn, H.C. Yeh, "Development of three-dimensional two-color dual-particle tracking microscope and its applications in monitoring DNA conformational changes and antibody-conjugated nanoparticle landings on the plasma membrane," *ACS Nano*, vol. 14, no. 7, pp. 7927–7939, Jul. 2020, doi: 10.1021/acsnano.9b08045.

[3] X. Peng, X. Liu, Y.L. Liu, J.Y. Kim, **P. Ang**, A. Nguyen, J. Leal, H.C. Yeh, D. Ghosh, "Brain penetrating peptide shuttles across the blood-brain barrier and extracellular space," 2019, doi: 10.26434/chemrxiv.8242871.v1.

[4] Y.L. Liu, C.K. Chou, M. Kim, R. Vasisht, Y.A. Kuo, **P. Ang**, C. Liu, E.P. Perillo, Y.A. Chen, K. Blocher, H. Horng, Y.I. Chen, D.T. Nguyen, T. Yankeelov, M.C Hung, A.K. Dunn, H.C. Yeh, "Assessing metastatic potential of breast cancer cells based on EGFR dynamics," *Scientific Reports*, vol. 9. no. 3395, Mar. 2019. doi: 10.1038/s41598-018-37625-0.

[5] J. Orr, C. Gill, K. Agrawal, S. Baruah, C. Cianfarani, **P. Ang**, C. Wong, "Elasticity of Workloads and Periods of Parallel Real-Time Tasks," *Proceedings of the 26th International Conference on Real-Time Networks and Systems (RTNS '18)*, ACM, New York, NY, USA, pp. 61-71, Oct, 2018. doi: 10.1145/3273905.3273915.

HONORS & AWARDS

Vanderbilt Provost's Graduate Fellowships	Mar. 2019
Undergraduate Research Fellowship (URF)	May 2018
Poster Exhibition on Engineering Research - *3rd place*	May 2018
J.K. Aggarwal Endowed Presidential Scholarship in Electrical and Computer Engineering	Aug. 2018
David and Ruth Beer Endowments for Student Excellence in Technical Communication	May 2017

TEACHING EXPERIENCE

Teaching Assistant - *Introduction to Computer Architecture* Aug. 2020 – Nov 2020
Instructor: Lisa Wu Wills

- Created a C programming assignment that exposed undergraduate underclassmen to their first multi-file program
- Generated test questions involving computer architecture concepts such as memory management and caches
- Engaged students through interactive debugging sessions for C and RISC-V programs

Teaching Assistant - *Introduction to Computer Architecture* Jan. 2020 – May 2020
Instructor: Alvin Lebeck

- Clarified system architecture concepts such as caches and pipelined datapath in real-time during class
- Debugged C and MIPS programs ranging from pointer management to recursion during weekly office hours

Teaching Assistant - *Operating Systems* Jan. 2019 – May 2019
Instructor: Ramesh Yerraballi

- Simplified operating systems concepts such as virtual memory and file systems during biweekly recitation sessions
- Assisted in debugging of multi-threaded and lock-based software
- Evaluated students' implemented operating system and comprehension of operating system concepts

Teaching Assistant - *Introduction to Embedded Systems* Jan. 2018 – May 2018
Instructor: Ramesh Yerraballi

- Presented basic software and hardware design constructs to students in weekly lab meetings
- Co-supervised three weekly lab sections with 20 students each where lab demonstrations were evaluated
- Held weekly office hours to further clarify embedded system concepts

SKILLS

Programming Languages: C, Java, C++, Chisel, Scala, Python, PyTorch, Verilog, Matlab
Software: Git Version Control, Ubuntu Linux, Bash Shell Scripting