# Yihan Pang

*Email:* pyihan1@vt.edu

## EDUCATION

**M.S. Computer Engineering;** 8/2016 - 10/2019
Virginia Polytechnic Institute and State University, Blacksburg, VA
**Advisor:** Dr. Binoy Ravindran
**Thesis:** *Leveraging Processor-diversity for Improved Performance in Heterogeneous-ISA Systems*
**GPA 3.81/4.0**

**B.S. Computer Engineering; Minor: Math, Cybersecurity** 8/2011 - 12/2015
Virginia Polytechnic Institute and State University, Blacksburg, VA
**GPA 3.78/4.0 Rank: 7**

## PUBLICATION

"Quantifying Memory Underutilization in HPC Systems and Using it to Improve Performance via Architecture Support."
G. Panwar*, D. Zhang*, **Yihan Pang***, M. Dahshan, N. DeBardeleben, B. Ravindran, and X. Jian (* first co-authors).
In *Proc. of the 52nd annual IEEE/ACM International Symposium on Microarchitecture (MICRO-52)*, October 2019
`https://jianxiapyh.github.io/files/yihan_micro19.pdf`

"Cross-ISA Execution of SIMD Regions for Improved Performance."
**Yihan Pang**, Robert Lyerly, and Binoy Ravindran.
In *Proc. of the 12th ACM International Conference on Systems and Storage (SYSTOR 2019)*, June 2019.
`https://jianxiapyh.github.io/files/yihan_systor19.pdf`

## EXPERIENCE

**Graduate Research Assistant** July. 2018 - Oct. 2019
High-performance, Energy-efficient, Assured Processing (HEAP) Lab Blacksburg, VA
Supervised by Dr. Xun Jian and Dr. Binoy Ravindran

- Quantified memory underutilization problems in HPC Systems
- Designed and developed architectural and OS support to boost microarchitecture performance through better memory utilization

**Graduate Research Assistant** Aug. 2016 - Oct. 2019
System Software Research Group (SSRG) Blacksburg, VA
Supervised by Dr. Binoy Ravindran
*Popcorn Linux* Project

- Explored potential performance benefits in heterogeneous systems with diversity in processor designs
- Designed SIMD extension migration support (compiler(LLVM) and kernel modifications(Linux)) for Instruction Set Architecture (ISA)-diverse multi/many-core architectures
- Enhanced existing profile-guided optimization techniques in LLVM to adjust for Instruction Set Architecture (ISA)-diverse multi/many-core architectures
- Developed a scheduler to improve system performance by leveraging processor-affinity

**Graduate Teaching Assistant** Aug. 2016 - May. 2017
ECE Dept at Virginia Tech Blacksburg, VA
Teaching assistant for ECE 4534 Embedded System Design
Supervised over 100 students in their senior capstone class over two semesters

**Summer Intern** Jun. 2016 - Aug. 2016
Bank of China Head Office Beijing, China
Interned in the Investment Banking and Asset Management Department

- Developed a program that analyzes investor location patterns
- Assisted in developing and implementing a mathematical model that predicts the primary market return based on regression analysis

**Undergraduate Research Assistant** Aug. 2015 - May. 2016
ECE Dept at VT and Lockheed-Martin Blacksburg, VA
Supervised by Lockheed-Martin Fellow Dr. Richard N. Pedersen
FPGA-based Switch Circuit Project

- Analyzed advanced switching circuits implemented in FPGAs
- Investigated techniques for optimizing Benes-Clos Networks
- Designed and implemented three variations of Benes-Clos Network
- Evaluated theoretical and empirical results

**Undergraduate Teaching Assistant** Aug. 2015 - Dec. 2015
ECE Dept at Virginia Tech Blacksburg, VA
Teaching assistant for ECE 4534 Embedded System Design

- Assisted in redesigning the class
- Designed milestone modules for future students
- Created prototype final deliverable for demonstrations

**Undergraduate Research Assistant** June. 2015 - Aug. 2015
ECE Dept at Virginia Tech Blacksburg, VA
Supervised by Dr. Cameron D. Patterson and William T. Baumann
*TAIGA* Project

- Assisted in designing a lab-based undergraduate course on security of cyber-physical systems
- Designed and developed lab modules that exploited vulnerabilities in a cyber-physical system's network, regulatory, and reconfiguration layer modules

## HONORS & AWARDS

**Full Tuition Scholarship**, Virginia Tech 2016-2019
**Dean's List**, Virginia Tech 2011-2015

## SKILLS

**Programming Languages**: C, C++, Bash, Python, Assembly, Java.
**Software Frameworks**: LLVM, Gem5, DRAMSim2, Ramulator