Yihan Pang

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RESEARCH INTERESTS

• Systems for Extended Reality • Spatial Computing • Energy-Efficient Computing • Distributed system

EDUCATION

Ph.D. Computer Science; 2020 – Present
University of Illinois at Urbana-Champaign, Champaign, IL
Advisor: Sarita Adve

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

B.S. Computer Engineering; Minor: Math, Cybersecurity 2011 – 2015
Virginia Polytechnic Institute and State University, Blacksburg, VA

SKILLS

Programming Languages: C/C++, CUDA, Bash, Python
Software Frameworks: ILLIXR, LLVM, Gem5

PUBLICATION

"Developed efficient offloading methods for XR scene reconstruction"
Sole Student Author, In submission

"RemoteVIO: Towards a Practical End-to-End VR System With Head Tracking Offloading"
Q. Jiang, **Y. Pang**, W. Sentosa, S. Gao, H. Muhammad, J. Zhang, J. Perez-Ramirez, D. Das, D. Cavalcanti, B. Godfrey, S.Adve
Accepted in *The 16th ACM Multimedia Systems Conference (MMSys'25)*, March 2025

"Towards Energy-Efficiency by Navigating the Trilemma of Energy, Latency, and Accuracy"
B. Tian, **Y. Pang**, H. Muhammad, S.Wang, S.Adve
In *The 23rd IEEE International Symposium on Mixed and Augmented Reality (ISMAR2024)*, October 2024

"AdaptiveFusion: Low Power Scene Reconsturction"
H. Muhammad, B. Tian, **Y. Pang**, H. Che, S.Wang, S.Adve
In *the 30th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2023 Poster)*, March 2023

"Offloading Visual-Inertial Odometry for Low Power Extended Reality"
Q. Jiang, M. Muhammad, W. Sentosa, J. Zhang, S. Gao, **Y. Pang**, H. Che, B.Godfrey, S.Adve
In *the 30th IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR 2023 Poster)*, March 2023

"ILLIXR: Enabling End-to-End Extended Reality Research" [**Best Paper & IEEE Micro Top Pick**]
H. Muhammad, R. Desai, S Grayson, X. Jiang, Y. Jiang, Y. Jing, J. Lee, F. Lu, **Y. Pang**, J Ravichandran, F. Sinnclair, B. Tian, H. Yuan, J. Zhang, and S. Adve
In *Proc. of 2021 IEEE International Symposium on Workload Characterization (IISWC)*
`http://rsim.cs.illinois.edu/Pubs/IISWC_2021_ILLIXR.pdf`

"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`

PROJECTS

Illinois Extended Reality Testbed(ILLIXR) Project 2020 – Present
Supervised by Prof. S. Adve Champaign, IL

- Exploring and designing new energy-efficient XR systems with an end-to-end approach
- Investigating hardware-software co-design and distributed opportunities for state-of-the-art XR algorithms particular in spatial computing domain.
- Developed an XR system featuring offloaded scene reconstruction, ensuring optimal user experience without compromise
- Designed an energy-efficient algorithm for scene reconstruction that minimizes power consumption without compromising mesh quality
- Developed methods to offload head tracking, reducing power consumption while preserving user experience

Free Memory Aware Project 2018 – 2019
Supervised by Prof. X. Jian and Prof. B. Ravindran Blacksburg, VA

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

Popcorn Linux Project 2016 – 2019
Supervised by Prof. B Ravindran Blacksburg, VA

- 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

HONORS & AWARDS

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