

# Tong Xing

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## INTERESTS

**Operating Systems, Virtualization, Heterogeneous Memory Systems, Heterogeneous-ISA CPU Systems**

## EDUCATION

**Ph.D.** at the School of Informatics, The University of Edinburgh, UK Jan 2021 – Present  
Topic: Operating System and Virtualization Environments  
Thesis: Redesigning Data-Center Supervisory Software for the New Generation of Peripheral Interconnects  
**M.S.** at the School of Engineering & Science, Stevens Institute of Technology, USA Sep 2018 – Jun 2020  
Program: Computer Science  
Thesis: Software Development Methods to Support Heterogeneous-ISA Application Migration  
**B.S.** at the School of Energy and Environment, Xihua University, China Sep 2013 – Jun 2017  
Program: Intelligent Building and Electrical Engineering

## PUBLICATIONS

**T. Xing**, C. Xiong, T. Wei, J. Balkind, B. Ravindran, A. Sanchez, A. Barbalace, “Stramash: A Fused Kernel Operating System For Cache-Coherent, Heterogeneous-ISA Systems,” *will be in Proceedings of the ACM International Conference on Architectural Support for Programming Languages and Operating Systems(Asplos’25)*, Neitherlands, April 2025  
D. Mvondo, **T. Xing**, A. Barbalace, “UTwinVM: Reliable hints on the effects of hypervisor updates on VMs in the Cloud,” *in Proceedings of the 25th ACM/IFIP International Middleware Conference(Middleware’24)*, Hong Kong, Pages 103 - 116, Dec 2024.  
**T. Xing**, C. Xiong, J. Picorel, Y. Chuan, A. Barbalace “Maximizing VMs’ IO Performance on Overcommitted CPUs with Fairness”, *in Proceedings of the 2023 ACM Symposium on Cloud Computing(SoCC’23)*, Santa Cruz, Pages 93–108, Oct 2023.  
H. Chuang\*, K. Manaouil\*, **T. Xing\***, A. Barbalace, P. Olivier, B. Heerekar, B. Ravindran, “Aggregate VM: Why Reduce or Evict VM’s Resources When You Can Borrow Them From Other Nodes,” *in Proceedings of the Eighteenth European Conference on Computer Systems (EuroSys ’23)*, Rome, Pages 469–487, May 2023. **(Co-First Author)\***  
**T. Xing**, H. Tajbakhsh, I. Haque, M. Honda, A. Barbalace, “Towards Portable End-to-End Network Performance Characterization of SmartNICs,” *in Proceedings of 13th ACM Asia-Pacific Workshop on Systems (APSys’22)*, Online, Pages 46–52, Aug 2022.  
**T. Xing**, A. Barbalace, P. Olivier, ML. Karaoui, W. Wang, B. Ravindran, “H-Container: Enabling Heterogeneous-ISA Container Migration in Edge Computing,” *ACM Transactions on Computer Systems (TOCS)*, Volume 39, Issue 1-4, Mar 2022.  
A. Barbalace, ML. Karaoui, W. Wang, **T. Xing**, P. Olivier, B. Ravindran, “Edge computing: the case for heterogeneous-ISA container migration”, *in Proceedings of the 16th ACM SIGPLAN/SIGOPS International Conference on Virtual Execution Environments (VEE ’20)*, Pages 73–87, Online, Mar 2020.

## TUTORIALS & PRESENTATIONS

**UK Systems Research**, Presentation at the 6th and 7th UK Systems Research workshop, Durham, UK, Characterizing SmartNIC Architectures, **Tong Xing**, Michio Honda, and Antonio Barbalace (University of Edinburgh)  
Maximize the IO performance of overcommitted VM, **Tong Xing**, Antonio Barbalace (University of Edinburgh)  
**H-Container Tutorial**, **Tong Xing**, Antonio Barbalace, presentation and tutorial at the First Popcorn Summit, 8th of Nov 2019, Virginia Tech, Blacksburg, VA, USA,  
Extension the H-Container to support Docker on local testbed and AWS  
Prepared the tutorial slide, test case and demo, help the Office of Naval Research (ONR) team in the tutorial  
**Programming Heterogeneous-ISA Platforms with Popcorn Linux OS and Compiler Framework**, Antonio Barbalace, Pierre Olivier, Binoy Ravindran, tutorial at SOSP 2019, 27th of October 2019, Huntsville, ON, CAN, \*  
Prepared tutorial slides material, test virtual machines, test experiments, and helped the audience in the tutorial

## WORK EXPERIENCE

**Research Associate – University of Edinburgh** Nov 2024 – present  
New OS design for next generation data center

\*Tong Xing substantially contributed to this tutorial, but at the time of submitting the proposal for this tutorial Tong was not actively working on the project

**Huawei Munich Research Center – PhD Intern**

Tiered Memory management in virtualization  
Supervised by Dr. Javier Picorel

Aug 2023 – Feb 2024

**SERVICE**

**Shadow PC** for EuroSys’25  
**Student Volunteer** for the EuroSys’21

**AWARDS &  
SCHOLARSHIPS**

**PhD Scholarship** Jan 2021  
School of Informatics, The University of Edinburgh

**Excellence in Graduate Research Award** May 2020  
Stevens Institute of Technology

**Student Travel Grant**  
ASPLOS’20, SoCC’23

**Provost’s Masters’ Fellowship** 2018  
Stevens Institute of Technology

**SKILLS**

**Areas of expertise**  
Linux kernel, KVM, Container(LXC/Docker), SmartNICs(DPU), Emulator(Qemu), PIM(Upmem)

**Programming Language**  
C, C++, Python, Assembler 8086, ARM Assembly, Makefile, Shell Script

**Spoken Language**  
English, Chinese

**HOBBYS**

Swimming, Cooking, Eating, Gym, Sauna

**REFERENCES**

**Dr.Antonio Barbalace** Senior Lecturer – Institute for Computing Systems Architecture, School of Informatics, The University of Edinburgh

**Dr.Michio Honda** Reader – Institute for Computing Systems Architecture, School of Informatics, The University of Edinburgh

**Dr.Binoy Ravindran** Full Professor – Department of Computer Science, The Bradley Department of Electrical and Computer Engineering, Virginal Tech