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 IN PROGRESS

T. Xing, A. Barbalace, "CXL shared memory: SMP or distributed OS? Inter-kernel IPC and namespaces!" *Under summitsion of **HotOS'25***

T. Xing, J. Yang, W. Boncela, J. Picorel, A. Barbalace, "Smart VM: The Art of Tiered Memory Virtual Machines Placement" *Plan for submission of **Eurosys'26***

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** New OS design for next generation data center	Nov 2024 – present
	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

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[*]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