Maurice Bailleu

Research Interests

My research interests lie in the broad area of computer systems, including distributed, dependable systems, operating systems, trusted computing and storage systems.

Education

01/18 - today **PhD Research Student**, *The University of Edinburgh*, UK
Specialization in System Architecture, especially trusted cloud storage
Advisor: Prof. Dr.-Ing. Pramod Bhatotia

09/17 **Diplom in Computer Science**, *TU Dresden*, Germany
Specialization in operating systems,
Diplom thesis: Byte-granular memory mapping with CHERI and L4Re.
Advisor: Prof. Dr. rer. nat. Hermann Härtig

Experience

05/22 - 08/22 **Research Intern**, *Microsoft Research*, Cambridge, UK
Rollback protect confidential writable storage.
Researching and design a block level storage system which provides rollback protection for confidential containers. Additionally, exploring the possibility to lift the protection from the block storage layer into a file system layer for increased performance.

10/15 - 03/16 **Research Associate**, *HP Labs*, Palo Alto, USA
Persistent Capabilities for L4/Fiasco.OC
Researching the use of kernel capabilities for NVM, in particular using L4/Fiasco.OC capabilities to manage NVM. Also exploring the possiblities to use capabilities over multiple nodes to mediate access to shared resources.

04/14 - 12/14 **Research Assistant**, *TU Dresden*, Germany
Implementing, testing and evaluating different checksum methods for IPC in Fiasco.OC and L4Re.

Teaching

03/22 - today **Teaching Assistant**, *TU Munich*, Germany
Cloud Lab

03/21 - today **Teaching Assistant**, *TU Munich*, Germany
Advanced System Programming

11/18 - 12/19 **Teaching Assistant**, *The University of Edinburgh*, UK
Extreme Computing

Publications

06/22 **Treaty: Secure Distributed Transactions**, *IEEE/IFIP DSN'22*, Baltimore, USA
Dimitra Giantsidi, Maurice Bailleu, Natacha Crooks and Pramod Bhatotia
Code available: https://github.com/TUM-DSE/Treaty

M.Bailleu@ed.ac.uk • *mbailleu.github.io*
github.com/mbailleu

07/21 **Avocado: A Secure In-Memory Distributed Storage System**, *USENIX ATC'21*, Online Event/Santa Clara, USA
Maurice Bailleu, Dimitra Giantsidi, Vasilis Gavrielatos, Do Le Quoc, Vijay Nagarajan and Pramod Bhatotia
Code available: https://github.com/mbailleu/avocado

06/19 **TEE-Perf: A Profiler for Trusted Execution Environments**, *IEEE/IFIP DSN'19*, Portland, USA
Maurice Bailleu, Donald Dragoti, Pramod Bhatotia and Christof Fetzer
Code available: https://github.com/mbailleu/tee-perf

02/19 **SPEICHER: Securing LSM-based Key-Value Stores using Shielded Execution**, *USENIX FAST'19*, Boston, USA
Maurice Bailleu, Jörg Thalheim, Pramod Bhatotia, Christof Fetzer, Michio Honda and Kapil Vaswani

11/17 **Interoperable capabilities**, *Patent: US20170329526A1*
Reto Achermann, Maurice Bailleu, Dejan S. Milojicic and Gabriel Parmer

Talks

07/21 **USENIX ATC'21**, *Online Event/Santa Clara*, USA, Conference Talk
Avocado: A Secure In-Memory Distributed Storage System

12/19 **Huawei Workshop**, *Shanghai*, China, Poster session

06/19 **Intel Labs**, *Hillsboro*, USA, Project Presentation
SPEICHER: Securing LSM-based Key-Value Stores using Shielded Execution

06/19 **IEEE/IFIP DSN'19**, *Portland*, USA, Conference Talk
TEE-Perf: A Profiler for Trusted Execution Environment

02/19 **USENIX FAST'19**, *Boston*, USA, Conference Talk
SPEICHER: Securing LSM-based Key-Value Stores using Shielded Execution

Awards

10/21 **2021-2022 Microsoft Research PhD Fellowship**

06/19 **Travel grant for DSN'19**

Skills

Languages	C, C++, C#, Java, Python, Assembly
OS/System programming	Linux, Fiasco.OC, L4Re, DPDK, SPDK
Hardware	NVMe, Network cards, SGX, CHERI, MIPS
Compiler	gcc, clang, llvm
Virtualization	Docker, qemu
Other	openssl, eRPC, gdb, perf, rocksdb, SCONE

References

Prof. Dr.-Ing. Pramod Bhatotia
TU Munich
pramod.bhatotia@in.tum.de

Natacha Crooks
UC Berkeley
ncrooks@berkeley.edu

Kapil Vaswani
Microsoft Research Cambridge
kapilv@microsoft.com

Cédric Fournet
Microsoft Research Cambridge
fournet@microsoft.com

Vijay Nagarajan
University of Edinburgh
vijay.nagarajan@ed.ac.uk