

Jörg Thalheim

RESEARCHER

Munich, Germany / Edinburgh, UK

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Research Interests

My research interests lie in the broad area of computer systems, including distributed systems, operating systems, and file-systems.

Education

The University of Edinburgh

PH.D. IN COMPUTER SCIENCE

- **Group:** Institute for Computing Systems Architecture (ICSA)
- **Advisor:** Prof. Pramod Bhatotia

Edinburgh, UK

Sep. 2017 - present

TU Dresden

DIPLOMA IN INFORMATION SYSTEMS ENGINEERING

- GPA of Thesis (Diplom): 1.3
- Advanced Courses: Systems Engineering & Communications Networks

Dresden, Germany

Sep. 2011 - Feb. 2017

Experience

TU Munich

SCIENTIFIC STAFF MEMBER

- **Project #1:** rkt-io: A Direct I/O Stack for Shielded Execution
- **Project #2:** vmsh: Inject shells into Hypervisor guests
- **Teaching:** Systems programming course

Munich, Germany

September 2021 - present

Microsoft Research

RESEARCH INTERNSHIP

- **Project:** Intel Processor Trace Based Root Cause Analysis
- **Mentor:** Prof. Baris Kasikci

Cambridge, UK

May 2017 - August 2017

Bell Labs

RESEARCH INTERNSHIP/THESIS

- **Project:** Sieve: Towards Actionable Insights from Monitored Metrics in Microservices
- **Mentor:** Prof. Bimal Viswanath

Stuttgart, Germany

March 2016 - July 2016

TU Dresden

RESEARCH ASSISTANT IN PARALLEL AND DISTRIBUTED SYSTEMS GROUP

- **Project #1:** Inspector — Data provenance for multithreaded programs using Intel Processor Trace (Intel PT)
- **Project #2:** Cntr — Lightweight OS containers
- **Advisor:** Dr. Pramod Bhatotia

Dresden, Germany

September 2015 - Feb 2017

Whisp GmbH

SOFTWARE ENGINEER & FOUNDER

- Recommendation platform driven by user opinions
- Ruby on Rails based API
- Server administration
- Android development

Dresden, Germany

January 2013 - January 2015

FSD Fahrzeugsystemdaten GmbH

ASSISTANT

- Development of a generic car anti shock test
- Taking and evaluating measurements

Dresden, Germany

January 2011 - August 2011

Publications

rkt-io: A direct I/O stack for shielded execution

JÖRG THALHEIM, HARSHAVARDHAN UNNIBHAVI, CHRISTIAN PRIEBE, PRAMOD BHATOTIA, PETER PIETZUCH

- **ACM Eurosys 2021**
- Project Page: <https://github.com/Mic92/rkt-io>

Online Event, United Kingdom

2021

SPEICHER: Securing LSM-based Key-Value Stores using Shielded Execution

MAURICE BAILLEU, JÖRG THALHEIM, AND PRAMOD BHATOTIA, CHRISTOF FETZER, MICHIO HONDA, KAPIL VASWANI

- **USENIX FAST 2019**

Boston, MA

2018

CNTR: Lightweight OS Containers

JÖRG THALHEIM, PRAMOD BHATOTIA, PEDRO FONSECA, BARIS KASIKCI

- **USENIX ATC 2018**
- Project Page: <https://github.com/Mic92/cntr>

Boston, MA

2018

Sieve: Towards Actionable Insights from Monitored Metrics in Microservices

JÖRG THALHEIM, ANTONIO RODRIGUES, BIMAL VISWANATH, ISTEMI EKIN AKKUS, PRAMOD BHATOTIA, RUICHUAN CHEN, LEI JIAO, AND CHRISTOF FETZER

- ACM/IFIP/USENIX Middleware 2017
- Project Page: <https://sieve-microservices.github.io/>

Las Vegas (USA)

2017

OS Containers on Diet using Cntr

JOERG THALHEIM, FRANZ GREGOR, PRAMOD BHATOTIA, AND CHRISTOF FETZER

- USENIX OSDI'16 (*Work-in-progress*)
- Project Page: <https://github.com/Mic92/cntr>

Savannah (USA)

2016

Inspector: Data Provenance using Intel Processor Trace (PT)

JOERG THALHEIM, PRAMOD BHATOTIA, AND CHRISTOF FETZER

- IEEE ICDCS'16
- Project Page: <https://github.com/Mic92/inspector>

Nara (Japan)

2016

Talks

ACM EuroSys'21

CONFERENCE TALK

rkt-io: A direct I/O stack for shielded execution

Online Event United Kingdom

April 2021

Rc3

WORKSHOP TALK

Nix flakes 101

Online Event

Dec. 2020

NixCon 2018

CONFERENCE TALK

About Nix sandboxes and breakpoints

London

Oct. 2018

ATC'18

CONFERENCE TALK

CNTR: Lightweight OS Containers

Boston, MA (USA)

July 2018

KLEE Workshop 2018

CONFERENCE TALK

HASE: Hardware-Assisted Symbolic Execution

London (UK)

April 2018

Middleware'17

CONFERENCE TALK

Sieve: Towards Actionable Insights for Monitored Microservices

Las Vegas (USA)

December 2017

Microsoft Research

INTERNSHIP PRESENTATION

Guided Symbolic Execution Using Hardware Traces

Cambridge (UK)

Jul. 2017

TU Dresden

THESIS DEFENSE

Sieve: Towards Actionable Insights for Monitored Microservices

TU Dresden (Germany)

Feb. 2017

ICDCS'16

CONFERENCE TALK

INSPECTOR: Data Provenance using Intel Processor Trace (PT)

Nara (Japan)

Jun. 2016

Bell Labs

INTERNSHIP PRESENTATION

Autoscaling of Microservices

Stuttgart (Germany)

Jul. 2016

Awards

2018 **Travel grant for ATC'18**, Usenix ATC 2018

Boston, MA

2017 **Travel grant for Middleware'17**, Middleware 2017

Las Vegas, United States

2016 **Travel grant for ICDCS'16**, ICDCS 2016

Nara, Japan

Projects

Nixpkgs/Nixos

CORE MAINTAINER OF NIXOS, A FUNCTIONAL LINUX DISTRIBUTION

<https://github.com/Nixos/nixpkgs/>

docker

MAINTAINER OF THE ZFS GRAPH-DRIVER

<https://mobyproject.org/>

python-mpd2

PYTHON LIBRARY FOR THE MPD NETWORK PROTOCOL

<https://github.com/Mic92/python-mpd2>

Skills

OS-/System programming	Linux kernel, Linux storage stack, Linux network stack, FUSE, SPDK, DPDK, LKL
Hardware	NVME, Network cards, SGX, Intel processor trace
Administration	Chef, Ansible, Mail-/Web-server, Network: BGP/OSPF/IPv6
Databases	Postgresql, Mysql, Mongodb, Elasticsearch, Redis
Web	Ruby-On-Rails, Flask, Sinatra
Languages	German, English, French
OS-Virtualisation	LXC, Docker (contributor), Kubernetes
Other	Full-system profiling (ebpf), low-level debugging, test-driven development, active in the open source community

References

- [1] **Prof. Pramod Bhatotia** TU Munich, Germany | ✉ pramod.bhatotia@in.tum.de
- [2] **Prof. Peter Pietzuch** Imperial College, London | ✉ prp@imperial.ac.uk
- [3] **Prof. Baris Kasikci** University of Michigan, USA | ✉ barisk@umich.edu
- [4] **Prof. Pedro Fonseca** Purdue, USA | ✉ pfonseca@purdue.edu
- [5] **Prof. Christof Fetzer** TU Dresden, Germany | ✉ christof.fetzer@tu-dresden.de
- [6] **Prof. Bimal Viswanath** Virginia Tech, USA | ✉ vbimal@cs.vt.edu