

# Simon Peter

Department of Computer Science  
The University of Texas at Austin  
2317 Speedway, Stop D9500, Austin, TX 78712

+1 206 446 1120  
simon@cs.utexas.edu  
<http://www.cs.utexas.edu/~simon/>

## Education

- Ph.D. in Computer Science** November 2012  
Systems Group, ETH Zurich, Switzerland, 2007–2012  
Advisor: Timothy Roscoe  
Thesis: *Resource Management in a Multicore Operating System*
- University Diploma in Computer Science** (with distinction) September 2006  
Carl von Ossietzky University Oldenburg, Germany, 2002–2006  
Thesis: *Design and Implementation of a Flexible Framework for Replication and its Integration into NFSv4*  
Minor in Music

## Professional Experience

- University of Washington** (UW), Seattle, WA, USA. 2022–present. Assistant Professor  
Leading research in operating systems and networking. Current focus on data centers.
- The University of Texas at Austin** (UT Austin), Austin, TX, USA. 2022–present. Adjunct Professor
- The University of Texas at Austin** (UT Austin), Austin, TX, USA. 2016–2021. Assistant Professor  
Leading research in operating systems and networking.
- University of Washington**, Seattle, WA, USA. 2012–2016. Research Associate  
*Arrakis*: High-performance data center server operating system  
*ARROW*: Incrementally deployable, available, and secure Internet networking
- Intel Labs**, Braunschweig, Germany. 2010. Visiting Scientist  
OS support for non-cache coherent hardware architecture using the Intel Single-Chip Cloud Computer
- Microsoft Research, Silicon Valley**, CA, USA. 2009. Research Intern  
*Fay*: extensible, distributed tracing of clusters down to the OS kernel
- Microsoft Research, Cambridge**, UK. 2008. Research Intern, Systems and Networking Group  
Topology and resource-aware placement of data-parallel computation on small heterogeneous clusters
- National Science Foundation**, Arlington, VA, USA. 2006. Research Appointment, CISE  
Studied file mutability and file system tracing
- University of California, Riverside**, CA, USA. 2005–2006. Visiting Researcher, Operating Systems and Distributed Systems Laboratory  
A flexible framework for replication and its integration into NFSv4.

## Awards

- Best Paper Award: *LineFS: Efficient SmartNIC Offload of a Distributed File System with Pipeline Parallelism*, 28th ACM Symposium on Operating Systems Principles (SOSP), 2021
- IEEE Micro Top Pick Honorable Mention: *AGAMOTTO: Automatic and Accurate Detection of Persistent Memory Bugs*, 2021
- SIGOPS Hall of Fame Award: *The Multikernel: A new OS architecture for scalable multicore systems*, 2020
- JouleSort world record in energy-efficient sorting (<http://sortbenchmark.org/>), 2019
- Alfred P. Sloan Research Fellow, 2018–2022

NSF CAREER Award, 2018–2022

Memorable Paper Award: *Strata: A Cross Media File System*, 2018

Jay Lepreau Best Paper Award: *Ryoan: A Distributed Sandbox for Untrusted Computation on Secret Data*, 2016

Madrona Prize: *Arrakis*, 2014

Jay Lepreau Best Paper Award: *Arrakis: The Operating System is the Control Plane*, 2014

German National Academic Foundation Fellowship, 2004–2006

## Teaching Experience

### Undergraduate courses:

CS378: *Multicore Operating Systems Implementation*, UT Austin: Spring 2021, Spring 2020, Spring 2019, Spring 2018, Spring 2017

### Graduate courses:

CSE599: *Datacenters*, UW: Spring 2022

CS395T: *Datacenters*, UT Austin: Fall 2021, Fall 2020, Fall 2019, Fall 2018

CS395T: *Multicore Operating Systems Implementation*, UT Austin: Fall 2016

CSEP551: *Graduate Operating Systems*, UW: Fall 2014 (co-taught with Andrew Baumann, Microsoft Research)

## Grants

### Principal investigator:

NSF. *Collaborative Research: CNS Core: Small: Scalable ACID Transactions for Persistent Memory Databases*, \$285K, 2020–22

NSF. *CNS Core: Medium: Collaborative Research: Cross Layer File Systems*, \$748K, 2019–23

Texas Systems Research Consortium, \$600K, 2017–21

Citadel Securities. *High-performance packet processing*, \$250K, 2018–19

Huawei. *Distributed Strata*, \$150K, 2018–19

Huawei. *Heterogeneous Memory Management*, \$150K, 2018–19

Sloan Foundation. *Alfred P. Sloan Award*, \$65K, 2018–22

NSF. *CAREER: High-Performance Packet Processing with Programmable NIC Data-Planes*, \$550K, 2018–22

### Senior personnel:

NSF. *CSR: CC: Large: A High-Performance Data Center Operating System*, \$588K, 2015–18

NSF. *Taking Collective Responsibility for the Postdoc Experience at the University of Washington*, \$844K, 2014–17

Google. *The Operating System as a Control Plane*, \$68K, 2014

NetApp. *Arrakis: A High-Performance Server Operating System*, \$45K, 2014

## Skills

Designed and implemented large projects in C, C++, Java, Python, x86 & ARM Assembly, Prolog, Haskell

Open-source software projects:

*Strata filesystem*: Founding member. Developed file block index structure based on Cuckoo hashing, inode and directory structures.

<https://github.com/ut-osa/strata>

*Barrelfish operating system*: Founding member. Developed most components from scratch. Bootloader, kernel, memory management, scheduling, device drivers, network stack, C/C++ libraries, etc.

<http://www.barrelfish.org/>

*Arrakis operating system*: Founding member. Code fork of Barrelfish. Developed I/O virtualization, device drivers, network and storage stacks, etc.

<http://arrakis.cs.washington.edu>

*AdPlug*: portable FM synthesizer emulator and music sequencer library. Available in all major Linux distributions.

<http://adplug.sf.net>

*libbinio*: Platform-independent binary I/O stream class library for C++. Has been used for data-intensive scientific projects at the Owens Valley Radio Observatory of the California Institute of Technology and at Clarkson University. Available in all major Linux distributions. <http://libbinio.sf.net>

*SQL Media Library*: Portable, C++ and SQL-based media management software with a flexible user interface.

<http://sqlmedialib.sf.net>

*Rasterbike*: Network multiplayer game in C with text and GTK+ user interfaces, used by many to learn network game programming.

*Debian GNU/Linux operating system* (<http://www.debian.org/>): Various bug fixes

*Firefox web-browser*: Network protocol add-on developer

*Linux kernel*: Device driver, scheduler, network stack development

*Asterisk PBX*: 3-party conference support in ISDN CAPI channel driver (<http://www.chan-capi.org>)

*GRUB 2 bootloader* (<http://www.gnu.org/software/grub/>): Strong cryptography support

## Service

### General chair:

DARPA/ISAT Energy-Resilient Systems (EGRESS) Workshop, 2021

3rd Texas Systems Research Symposium, Austin, TX, USA, 2020

DARPA/ISAT Low Latency Systems (LOLA) Workshop, San Jose, CA, 2020

2nd Texas Systems Research Symposium, Austin, TX, USA, 2019

Dagstuhl Seminar 18261: Discipline Convergence in Networked Systems, Dagstuhl, Germany, 2018

1st Texas Systems Research Symposium, Austin, TX, USA, 2018

Industry-Academia Partnership Cloud Workshop, Austin, TX, USA, 2017

### Program committee chair:

1st Workshop on Multicore and Rack-scale Systems (MaRS), London, England, 2016

9th EuroSys Doctoral Workshop (EuroDW), Bordeaux, France, 2015

4th Workshop on Systems for Future Multicore Architectures (SFMA), Amsterdam, The Netherlands, 2014

3rd Workshop on Systems for Future Multicore Architectures (SFMA), Prague, Czech Republic, 2013

### Program committee member:

28th ACM Symposium on Operating Systems Principles (SOSP), Koblenz, Germany, 2021

14th USENIX Symposium on Operating Systems Design and Implementation (OSDI), Banff, Alberta, Canada, 2020

17th USENIX Symposium on Networked Systems Design and Implementation (NSDI), Santa Clara, CA, USA, 2020

24th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS), Providence, RI, USA, 2019

8th Workshop on Systems for Future Multicore and Heterogeneous Architectures (SFMA), Porto, Portugal, 2018  
ACM SIGCOMM 2018 Workshop on Kernel-Bypass Networks (KBNets), Budapest, Hungary, 2018  
EuroSys Roger Needham Award Review Committee, Porto, Portugal, 2018  
2nd Workshop on Multicore and Rack-scale Systems (MaRS), Belgrade, Serbia, 2017  
11th EuroSys Doctoral Workshop (EuroDW), Belgrade, Serbia, 2017  
26th ACM Symposium on Operating Systems Principles (SOSP), Shanghai, China, 2017  
10th ACM International Systems and Storage Conference (SYSTOR), Haifa, Israel, 2017  
8th USENIX Workshop on Hot Topics in Cloud Computing (HotCloud), Denver, CO, USA, 2016  
12th USENIX Symposium on Operating Systems Design and Implementation (OSDI), Savannah, GA, USA, 2016  
6th ACM Symposium on Cloud Computing (SOCC), Hawaii, HI, USA, 2015  
5th Workshop on Systems for Future Multicore Architectures (SFMA), Bordeaux, France, 2015  
ACM European Conference on Computer Systems (EuroSys), Bordeaux, France, 2015  
34th IEEE International Conference on Distributed Computing Systems (ICDCS), Madrid, Spain, 2014

**Publicity chair:**

ACM European Conference on Computer Systems (EuroSys), Porto, Portugal, 2018  
26th ACM Symposium on Operating Systems Principles (SOSP), Shanghai, China, 2017

**External program committee:**

15th USENIX Symposium on Operating Systems Design and Implementation (OSDI), Santa Clara, CA, USA, 2021  
45th International Symposium on Computer Architecture (ISCA), Los Angeles, CA, USA, 2018  
12th ACM International Conference on emerging Networking EXperiments and Technologies (CoNEXT), Irvine, CA, USA, 2016  
ACM Transactions on Computer Systems (TOCS), July 2015  
ACM Symposium on User Interface Software and Technology (UIST), Charlotte, NC, USA, 2015  
ACM Operating Systems Review, December 2013  
IEEE Transactions on Computers, March 2013  
27th IEEE International Parallel & Distributed Processing Symposium (IPDPS), Boston, MA, USA, 2013  
18th ACM Conference on Computer and Communications Security (CCS), Chicago, IL, USA, 2011  
26th IEEE International Conference on Distributed Computing Systems (ICDCS), Lisbon, Portugal, 2006

**Shadow PC:**

11th USENIX Symposium on Networked Systems Design and Implementation (NSDI), Seattle, WA, USA, 2014

**Industry:**

Imperative Execution, Inc., Software Consultant, 2018

**Government:**

DARPA Information Science and Technology (ISAT) Study Group, 2019-2022

**Publications**

Waleed Reda, Dejan Kostić, Marco Canini, and **Simon Peter**. RDMA is Turing complete, we just did not know it yet! In *19th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, April 2022.

Amanda Raybuck, Tim Stamler, Wei Zhang, Mattan Erez, and **Simon Peter**. HeMem: Scalable Tiered Memory Management for Big Data Applications and Real NVM. In *28th ACM Symposium on Operating Systems Principles (SOSP)*, Koblenz, Germany, October 2021.

Jongyul Kim, Insu Jang, Waleed Reda, Jaeseong Im, Marco Canini, Dejan Kostić, Youngjin Kwon, **Simon Peter**, and Emmett Witchel. LineFS: Efficient SmartNIC Offload of a Distributed File System with Pipeline Parallelism. In *28th ACM Symposium on Operating Systems Principles (SOSP)*, Koblenz, Germany, October 2021. **Best Paper Award**.

Jaehyun Hwang, Midhul Vuppalapati, **Simon Peter**, and Rachit Agarwal. Rearchitecting Linux Storage Stack for  $\mu$ s Latency and High Throughput. In *15th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, July 2021.

Thomas E. Anderson, Marco Canini, Jongyul Kim, Dejan Kostić, Youngjin Kwon, **Simon Peter**, Waleed Reda, Henry N. Schuh, and Emmett Witchel. Assise: Performance and Availability via Client-local NVM in a Distributed File System. In *12th Annual Non-Volatile Memories Workshop (NVMW)*, San Diego, CA, USA, March 2021.

Ian Neal, Gefei Zuo, Eric Shiple, Tanvir Ahmed Khan, Youngjin Kwon, **Simon Peter**, and Baris Kasikci. Rethinking File Mapping for Persistent Memory. In *19th USENIX Conference on File and Storage Technologies (FAST)*, February 2021.

Ian Neal, Ben Reeves, Ben Stoler, Andrew Quinn, Youngjin Kwon, **Simon Peter**, and Baris Kasikci. AGAMOTTO: How Persistent is your Persistent Memory Application? In *14th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Banff, Canada, November 2020. **IEEE Micro Top Pick Honorable Mention**.

Thomas E. Anderson, Marco Canini, Jongyul Kim, Dejan Kostić, Youngjin Kwon, **Simon Peter**, Waleed Reda, Henry N. Schuh, and Emmett Witchel. Assise: Performance and Availability via Client-local NVM in a Distributed File System. In *14th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Banff, Canada, November 2020.

Ming Liu, Tianyi Cui, Henry Schuh, Arvind Krishnamurthy, **Simon Peter**, and Karan Gupta. Offloading Distributed Applications onto SmartNICs using iPipe. In *ACM Special Interest Group on Data Communication (SIGCOMM)*, Beijing, China, August 2019.

Ming Liu, **Simon Peter**, Arvind Krishnamurthy, and Phitchaya Mangpo Phothilimthana. E3: Energy-Efficient Microservices on SmartNIC-Accelerated Servers. In *2019 USENIX Annual Technical Conference (USENIX ATC)*, Renton, WA, July 2019.

Antoine Kaufmann, Tim Stamler, **Simon Peter**, Naveen Kr. Sharma, Arvind Krishnamurthy, and Thomas Anderson. TAS: TCP Acceleration as an OS Service. In *Proceedings of the 14th EuroSys Conference (EuroSys)*, Dresden, Germany, March 2019.

Yungang Bao, Lars Eggert, **Simon Peter**, and Noa Zilberman. Discipline Convergence in Networked Systems (Dagstuhl Seminar 18261). *Dagstuhl Reports*, 8(6):149–172, January 2019.

Tyler Hunt, Zhiting Zhu, Yuanzhong Xu, **Simon Peter**, and Emmett Witchel. Ryoan: A Distributed Sandbox for Untrusted Computation on Secret Data. *ACM Transactions on Computer Systems (TOCS)*, 35(4), December 2018.

Phitchaya Mangpo Phothilimthana, Ming Liu, Antoine Kaufmann, **Simon Peter**, Rastislav Bodik, and Thomas Anderson. Floem: A Programming System for NIC-Accelerated Network Applications. In *13th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Carlsbad, CA, October 2018.

Youngjin Kwon, Henrique Fingler, Tyler Hunt, **Simon Peter**, Emmett Witchel, and Thomas Anderson. Strata: A Cross Media File System. In *9th Annual Non-Volatile Memories Workshop (NVMW)*, San Diego, CA, USA, March 2018. **Memorable Paper Award**.

Youngjin Kwon, Henrique Fingler, Tyler Hunt, **Simon Peter**, Emmett Witchel, and Thomas Anderson. Strata: A Cross Media File System. In *26th ACM Symposium on Operating Systems Principles (SOSP)*, Shanghai, China, October 2017.

Youngjin Kwon, Hangchen Yu, **Simon Peter**, Christopher J. Rossbach, and Emmett Witchel. Ingens: Huge Page Support for the OS and Hypervisor. *SIGOPS Oper. Syst. Rev.*, 51(1):83–93, September 2017.

Tyler Hunt, Zhiting Zhu, Yuanzhong Xu, **Simon Peter**, and Emmett Witchel. Distributed Sandbox using SGX. *USENIX ;login.*, 42(4):56–62, July 2017.

Naveen Kr. Sharma, Antoine Kaufmann, Thomas Anderson, Changhoon Kim, Arvind Krishnamurthy, Jacob Nelson, and **Simon Peter**. Evaluating the Power of Flexible Packet Processing for Network Resource Allocation. In *14th USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Boston, MA, USA, March 2017.

Youngjin Kwon, Hangchen Yu, **Simon Peter**, Chris Rossbach, and Emmett Witchel. Coordinated and Efficient Huge Page Management with Ingens. In *12th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Savannah, GA, USA, November 2016.

Tyler Hunt, Zhiting Zhu, Yuanzhong Xu, **Simon Peter**, and Emmett Witchel. Ryoan: A Distributed Sandbox for Untrusted Computation on Secret Data. In *12th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Savannah, GA, USA, November 2016. **Best Paper Award**.

Peter Bailis, **Simon Peter**, and Justine Sherry. Introducing Research for Practice. *ACM Queue*, 14(2):76–90, June 2016.

Antoine Kaufmann, **Simon Peter**, Naveen Kr. Sharma, Thomas Anderson, and Arvind Krishnamurthy. High Performance Packet Processing with FlexNIC. In *21st International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Atlanta, GA, USA, April 2016.

**Simon Peter**, Jialin Li, Irene Zhang, Dan R. K. Ports, Doug Woos, Arvind Krishnamurthy, Thomas Anderson, and Timothy Roscoe. Arrakis: The Operating System is the Control Plane. *ACM Transactions on Computer Systems (TOCS)*, 33(4), January 2016.

Vincent Liu, Danyang Zhuo, **Simon Peter**, Arvind Krishnamurthy, and Thomas Anderson. Subways: A Case for Redundant, Inexpensive Data Center Edge Links. In *11th International Conference on emerging Networking Experiments and Technologies (CoNEXT)*, Heidelberg, Germany, December 2015.

Antoine Kaufmann, **Simon Peter**, Thomas Anderson, and Arvind Krishnamurthy. FlexNIC: Rethinking Network DMA. In *15th USENIX Workshop on Hot Topics in Operating Systems (HotOS)*, Kartause Ittingen, Switzerland, May 2015.

**Simon Peter**, Jialin Li, Irene Zhang, Dan R. K. Ports, Doug Woos, Arvind Krishnamurthy, Thomas Anderson, and Timothy Roscoe. Arrakis: The Operating System is the Control Plane. In *11th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Broomfield, CO, USA, October 2014. **Best Paper Award**.

**Simon Peter**, Umar Javed, Qiao Zhang, Doug Woos, Arvind Krishnamurthy, and Thomas Anderson. One Tunnel is (Often) Enough. In *ACM SIGCOMM 2014 Conference on Applications, Technologies, Architectures, and Protocols for Computer Communication*, Chicago, IL, USA, August 2014.

**Simon Peter**, Irene Zhang, Dan R. K. Ports, Jialin Li, Doug Woos, Thomas Anderson, Arvind Krishnamurthy, and Mark Zbikowski. Towards High-Performance Application-Level Storage Management. In *6th USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage)*, Philadelphia, PA, USA, June 2014.

**Simon Peter** and Thomas Anderson. Arrakis: The Operating System as Control Plane. *USENIX ;login.*, 38(4):44–47, August 2013.

Seungyeop Han, Vincent Liu, Qifan Pu, **Simon Peter**, Thomas Anderson, Arvind Krishnamurthy, and David Wetherall. Expressive Privacy Control with Pseudonyms. In *ACM SIGCOMM 2013 Conference on Applications, Technologies, Architectures, and Protocols for Computer Communication*, Hong Kong, China, August 2013.

**Simon Peter** and Thomas Anderson. Arrakis: A Case for the End of the Empire. In *14th USENIX Workshop on Hot Topics in Operating Systems (HotOS)*, Santa Ana Pueblo, NM, USA, May 2013.

Úlfar Erlingsson, Marcus Peinado, **Simon Peter**, Mihai Budiu, and Gloria Mainar-Ruiz. Fay: Extensible Distributed Tracing from Kernels to Clusters. *ACM Transactions on Computer Systems (TOCS)*, 30(4), November 2012.

Adrian Schüpbach, Andrew Baumann, Timothy Roscoe, and **Simon Peter**. A declarative language approach to device configuration. *ACM Transactions on Computer Systems (TOCS)*, 30(1), February 2012.

Úlfar Erlingsson, Marcus Peinado, **Simon Peter**, and Mihai Budiu. Fay: Extensible Distributed Tracing from Kernels to Clusters. In *23rd ACM Symposium on Operating Systems Principles (SOSP)*, Cascais, Portugal, October 2011.

**Simon Peter**, Adrian Schüpbach, Dominik Menzi, and Timothy Roscoe. Early experience with the Barrelfish OS and the Single-Chip Cloud Computer. In *3rd Many-core Applications Research Community (MARC) Symposium*, Ettlingen, Germany, July 2011.

Adrian Schüpbach, Andrew Baumann, Timothy Roscoe, and **Simon Peter**. A declarative language approach to device configuration. In *16th International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS)*, Newport Beach, CA, USA, March 2011.

**Simon Peter**, Adrian Schüpbach, Paul Barham, Andrew Baumann, Rebecca Isaacs, Tim Harris, and Timothy Roscoe. Design Principles for End-to-End Multicore Schedulers. In *2nd USENIX Workshop on Hot Topics in Parallelism (HotPar)*, Berkeley, CA, USA, June 2010.

Andrew Baumann, Paul Barham, Pierre-Evariste Dagand, Tim Harris, Rebecca Isaacs, **Simon Peter**, Timothy Roscoe, Adrian Schüpbach, and Akhilesh Singhanian. The Multikernel: A new OS architecture for scalable multicore systems. In *22nd ACM Symposium on Operating Systems Principles (SOSP)*, Big Sky, MT, USA, October 2009.

Andrew Baumann, **Simon Peter**, Adrian Schüpbach, Akhilesh Singhanian, Timothy Roscoe, Paul Barham, and Rebecca Isaacs. Your computer is already a distributed system. Why isn't your OS? In *12th USENIX Workshop on Hot Topics in Operating Systems (HotOS)*, Monte Verità, Switzerland, May 2009.

Adrian Schüpbach, **Simon Peter**, Andrew Baumann, Timothy Roscoe, Paul Barham, Tim Harris, and Rebecca Isaacs. Embracing Diversity in the Barrelfish Manycore Operating System. In *1st Workshop on Managed Multicore Systems (MMCS)*, Boston, MA, USA, June 2008.

**Simon Peter**, Andrew Baumann, Timothy Roscoe, Paul Barham, and Rebecca Isaacs. 30 seconds is not enough! A study of operating system timer usage. In *Proceedings of the ACM SIGOPS/EuroSys European Conference on Computer Systems (EuroSys)*, April 2008.

**Simon Peter**. Operating System Design for Concurrent Languages and Heterogeneous Hardware. In *2nd EuroSys Doctoral Workshop*, Glasgow, Scotland, April 2008.

## Theses and Technical Reports

**Simon Peter**. *Resource Management in a Multicore Operating System*. PhD thesis, ETH Zurich, October 2012.

**Simon Peter**, Rebecca Isaacs, Paul Barham, Richard Black, and Timothy Roscoe. Efficient data-parallel computing on small heterogeneous clusters. Technical Report 756, ETH Zurich, April 2012.

**Simon Peter**, Andrew Baumann, Zachary Anderson, and Timothy Roscoe. Gang scheduling isn't worth it...yet. Technical Report 745, ETH Zurich, November 2011.

**Simon Peter**. Design and Implementation of a Flexible Framework for Replication and its Integration into NFSv4. Master's thesis, Systems Software and Distributed Systems Group, Department of Computer Science, Carl von Ossietzky University Oldenburg, Germany, September 2006.

**Simon Peter**. Erzeugung und Sammlung von Testgraphen. Thesis, Graphs and Networks Group, Department of Computer Science, Carl von Ossietzky University of Oldenburg, Germany, June 2004.

## Book Contributions

Thomas Anderson and Michael Dahlin. *Operating Systems: Principles and Practice*. Recursive Books, 2nd edition, July 2014.

Günther Stiege. *Graphen und Graphalgorithmen*. Shaker, May 2006.

## Invited Talks

*Building Better Datacenters: The Quest for Low Latency*, UW-Madison (December 2020), KAUST (January 2021), ETH Zurich (February 2021), University of Washington (March 2021), CMU (March 2021), EPFL (April 2021), Imperial College London (May 2021)

*E3: Energy-Efficient Microservices on SmartNIC-Accelerated Servers*, Industry-Academia Partnership Cloud Workshop, Austin, TX (December 2019)

*The Quest for Low Latency*, Winter School on Operating Systems, Dagstuhl, Germany (February 2019), Cornell (May 2019)

*Accelerating Distributed Applications with Flexible Packet Processing*, Microsoft Research Faculty Summit (August 2018)

*Efficient TCP Packet Processing*, Dagstuhl Seminar on Discipline Convergence in Networked Systems (June 2018)

*Cross Media File Storage with Strata*, FAU Erlangen-Nuremberg (June 2018), University of Washington (May 2018)

*Accelerating Networked Applications with Flexible Packet Processing*, Open-NFP webinar (May 2017)

*High Performance Packet Processing with FlexNIC & Research Overview*, VMware Research (August 2016), UTCS Advisory Council (October 2016)

*Fast Datacenter Server I/O*, KAIST (May 2016), Seoul National University (May 2016), 2nd PortugalUT Austin Summer School in Systems and Networking (June 2016)

*Panel: Sweet Spots and Limits for Virtualization*, VEE (April 2016)

*Building an Operating System for the Data Center*, IBM Research Zurich (May 2015), Qumulo (April 2015), UW-Madison (April 2015), UCSD (April 2015), Columbia University (April 2015), MIT (April 2015), MPI-SWS (April 2015), IST Austria (March 2015), UT Austin (March 2015), UCLA (March 2015), UToronto (March 2015), Harvard (March 2015), URochester (March 2015), Cornell (March 2015), UWaterloo (February 2015), Princeton (February 2015), UMichigan (February 2015), UCSC (February 2015), MSR Redmond (February 2015), Georgia Tech (February 2015), University of Washington (January 2015)

*Rethinking Network DMA*, Cambridge University (December 2014)

*Arrakis: The Operating System is the Control Plane*, VMware (August 2015), USENIX Annual Technical Conference (June 2015), Centrum Wiskunde & Informatica (CWI) (April 2014), University of Washington (October 2013, October 2014)

*The Postdoc Experience*, 8th EuroSys Doctoral Workshop (April 2014)

*Arrakis: An OS Architecture for Direct Hardware Access*, ETH Zurich (April 2013)

*Operating System Resource Management on Multicore Architectures*, Microsoft Research Redmond (March 2012), Oracle Labs (February 2012), NICTA (February 2012), Microsoft Research Silicon Valley (January 2012), University of Washington (January 2012)

*Fay: Extensible Distributed Software Tracing from OS Kernels to Clusters*, TU Dortmund, December 2011

## Supervised Students

Tim Stamler, Amanda Austin, Rajath Shashidhara, Kevin Sijo Puthusseri, Syed Akbar Mehdi, and Deukyeon Hwang, 2020. Current graduate students.

Ming Liu. *Building Distributed Systems Using Programmable Networks*. PhD thesis, University of Washington, 2020. Supervisor.



Natacha Crooks. *A client-centric approach to transactional databases*. PhD thesis, UT Austin, 2019. Supervisor.

Youngjin Kwon. *Designing Systems for Emerging Memory Technologies*. PhD thesis, UT Austin, 2018. Supervisor.

Tianhao Zheng. *Efficient Fine-grained Virtual Memory*. PhD thesis, UT Austin, 2018. Committee member.

Antoine Kaufmann. *Efficient, Secure, and Flexible High Speed Packet Processing for Data Centers*. PhD thesis, UW, 2018. Supervisor.

Alex Upshaw. Implementing Support for Intel SGX on the Barrelfish Research Operating System, 2018. Turing honors thesis.

Samantha Miller. Network Stack Optimization in MapReduce, 2018. Turing honors thesis.

Pandian Raju. PebblesDB: Building Key-Value Stores using Fragmented Log-Structured Merge Trees. Master's thesis, UT Austin, 2018. Reader.

Sebastian Gomez Angel. *Unobservable communication over untrusted infrastructure*. PhD thesis, UT Austin, 2018. Committee member.

Noah Theodore Morrison. WBKVS: Write-buffered Key Value Store, 2018. Turing honors thesis.

Kyle DeHolton. Efficient failover using a flexible NIC, 2017. Turing honors thesis.

Jonathan Ibers. Paxos in a Network Card, 2017. Turing honors thesis.

Hao Chen. Studying and Improving POSIX Asynchronous IO Implemented in GLIBC. Master's thesis, UT Austin, 2017. Reader.

Tongliang Liao. TAI: Threaded Asynchronous I/O Library for Performance and Portability. Master's thesis, UT Austin, 2017. Reader.

Trinabh Gupta. *Toward practical and private online services*. PhD thesis, UT Austin, 2017. Committee member.

Joongi Kim. *A High-Performance Packet Processing Framework for Heterogeneous Processors*. PhD thesis, KAIST, 2016. Committee member.

John Adam Thywissen. *Implicitly Distributing Pervasively Concurrent Programs*. PhD thesis, UT Austin, 2016–ongoing. Committee member.

Henrique Fingler. Strata: A Cross Media File System, 2016–2017. Advisor.

Abderrahman Said-Alaoui and David Shi. Network stack and Intel XL710 device driver for Arrakis, 2016–17. UT Austin undergraduate research (CS370).

Zhiting Zhu, Xin Xu, Liusha Huang, and Omar Sandoval. A Buffer Cache for Multicore Operating Systems. University of Washington Undergraduate Research Project (UW URP), 2014.

Renhao Xie. Evaluating MapReduce on the Arrakis OS. UW URP, 2014.

Dalton Black and Oleg Godunok. Fast Paxos with User-Level I/O. UW URP, 2014.

Oleg Godunok. An IOMMU and VT-d Driver for the Arrakis OS. UW URP, 2014.

Umar Javed, Qiao Zhang, and Doug Woos. One Tunnel is (Often) Enough. In *SIGCOMM*, 2014.

Chris Alfino. Porting a Mail Relay to the Arrakis OS. UW URP, 2014.

Xiangguang Zheng. Porting mTCP to the Arrakis OS. UW URP, 2014.

Sunjay Cauligi. Security and Performance of a Fast Onion Router. UW URP, 2014.

Shiny Yang. A TCP Implementation for the Arrakis OS. UW URP, 2014.

Raphael Fuchs. Incremental Application Checkpointing and Restart. Class Project, 2013. UW.

Raphael Fuchs. A session control interface for a Multikernel. Bachelor's thesis, ETH Zurich, 2012.

Reto Lindegger, Lukas Humbel, and Daniela Meier. Using virtualization for PCI device drivers. Distributed Systems Lab, ETH Zurich, 2012.

Bram Scheidegger. Barrelfish on Netronome. Bachelor's thesis, ETH Zurich, 2011.

Raffaele Sandrini. VMkit: A lightweight hypervisor library for Barrelfish. Master's thesis, ETH Zurich, 2009.

## Press

*HPCwire*. Visualization and Filesystem Use Cases Show Value of Large Memory Fat Nodes on Frontera. February 2, 2021. <https://www.hpcwire.com/2021/02/02/visualization-and-fs-use-cases-show-value-of-large-memory-fat-nodes-on-frontera/>

## Languages

Fluent in English and German. German citizen.

## References

Thomas Anderson <tom@cs.washington.edu>

Arvind Krishnamurthy <arvind@cs.washington.edu>

Timothy Roscoe <troscoe@inf.ethz.ch>

Lorenzo Alvisi <la13@cornell.edu>