

Vaastav Anand

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Research Interests	I like building, testing, breaking, and fixing systems. My primary research interests lie at the heart of cloud computing, focused on building more performant cloud systems and diagnosing performance issues in such systems. I am also interested in the performance reliability of Post-Moore heterogeneous hardware systems in the context of cloud systems.	
Education	PhD, Computer Science	2020-current
	Max Planck Institute for Software-Systems (MPI-SWS), Saarbruecken, Germany	
	MSc, Computer Science	2018-2020
	University of British Columbia, Vancouver, Canada	
	Thesis: Dara the explorer : coverage based exploration for model checking of distributed systems in Go	
Selected Research Projects	BSc, Computer Science	2013-2018
	University of British Columbia, Vancouver, Canada	
	Cerulean	2024-current
	Cerulean is a human-in-the-loop LLM-based tool for generating microservice systems from high level user requirements.	
	Iridescent	2022-current
	Iridescent is a library that provides developers a systematic way for developers to support generalization while also taking advantage of specialization optimization opportunities arising from the workload and the deployment environment.	
	Blueprint (fka Millenial)	2020-current
	A framework for developing flexible and modular microservice applications. Provides a programming abstraction for writing microservice applications that makes it easy to later change aspects related to the system's scaffolding and topology.	
Publications	Iridescent: A Framework Enabling Online System Implementation Specialization Vaastav Anand , Deepak Garg, Antoine Kaufmann. Under Review.	
	SoK: Demystifying the multiverse of MPC protocols Roberta De Viti, Vaastav Anand , Pierfrancesco Ingo, Deepak Garg. Under Review.	
	Intent-Based System Design and Operation. Vaastav Anand , Yichen Li, Alok Gautam Kumbhare, Celine Irvine, Chetan Bansal, Gagan Somashekar, Jonathan Mace, Pedro Las-Casas, Ricardo Bianchini, Rodrigo Fonseca. Practical Adoption Challenges of ML for Systems (co-located with SOSP'25), PACMI'25 .	
	DMAS-Forge: A Framework for Transparent Deployment of AI Applications as Distributed Systems. Alessandro Cornacchia, Vaastav Anand , Muhammad Bilal, Zafar Ayyub Qazi, Marco Canini. 1st Workshop on Systems for Agentic AI (co-located with SOSP'25), SAAC'25 .	
	Generating representative macrobenchmark microservice systems from distributed traces	

with Palette.

Vaastav Anand, Matheus Stolet, Jonathan Mace, Antoine Kaufmann. 16th ACM SIGOPS Asia-Pacific Workshop on Systems (co-located with SOSP'25), **ApSys 2025**.

Automated Service Design with Cerulean (Project Showcase).

Vaastav Anand, Alok Kumbhare, Celine Irvine, Chetan Bansal, Gagan Somashekar, Jonathan Mace, Pedro Las-Casas, Rodrigo Fonseca. 6th International Workshop on Cloud Intelligence/AIOps Workshop (co-located with ICSE), **AIOps 2025**.

Towards Using LLMs for Distributed Trace Comparison (Abstract).

Vaastav Anand, Pedro Las-Casas, Rodrigo Fonseca, Antoine Kaufmann. 6th International Workshop on Cloud Intelligence/AIOps Workshop (co-located with ICSE), **AIOps 2025**.

Blueprint: A Toolchain for Highly Reconfigurable Microservice Applications.

Vaastav Anand, Deepak Garg, Antoine Kaufmann, Jonathan Mace. In Symposium on Operating Systems Principles, **SOSP 2023**.

The Benefit of Hindsight: Tracing Edge Cases in Distributed Systems.

Lei Zhang, Zhiqiang Xie, **Vaastav Anand**, Ymir Vigfusson, Jonathan Mace. In Networked Systems Design and Implementation, **NSDI 2023**.

The Odd One Out: Energy is not like Other Metrics.

Vaastav Anand, Zhiqiang Xie, Matheus Stolet, Roberta De Viti, Thomas Davidson, Reyhaneh Karimipour, Safya Alzayat, Jonathan Mace. In **HotCarbon 2022**.

Smooth Kronecker: Solving the Combing Problem in Kronecker Graphs.

Vaastav Anand*, Puneet Mehrotra*, Daniel Margo*, Margo Seltzer. In Joint Workshop on Graph Data Management Experiences and Systems and Network Data Analytics, **GRADES-NDA 2020**.

Sifter: Scalable Sampling for Distributed Traces, without Feature Engineering.

Pedro Las-Casas, Giorgi Papakerashvili, **Vaastav Anand**, Jonathan Mace. In Symposium on Cloud Computing, **SoCC 2019**.

Pre-Prints

Chatting with Logs: An exploratory study on Finetuning LLMs for LogQL.

Vishwanath Seshagiri, Siddharth Balyan, **Vaastav Anand**, Kaustubh Dhole, Ishan Sharma, Avani Wildani, José Cambronero, Andreas Züfle. In **arXiv 2025**, <https://arxiv.org/pdf/2412.03612>.

Columbo: Low Level End-to-End System Traces through Modular Full-System Simulation.

Jakob Görgen, **Vaastav Anand**, Hejing Li, Jialin Li, and Antoine Kaufmann. In **arXiv 2024**, <https://arxiv.org/pdf/2408.05251>.

SoK: The Faults in our Graph Benchmarks.

Puneet Mehrotra*, **Vaastav Anand***, Daniel Margo, Milad Rezaei Hajidehi, and Margo Seltzer. In **arXiv 2024**, <https://arxiv.org/pdf/2404.00766>.

Aggregate-driven trace visualizations for performance debugging.

Vaastav Anand, Matheus Stolet, Thomas Davidson, Ivan Beschastnikh, Tamara Munzner, and Jonathan Mace. In **arXiv 2020**, <https://arxiv.org/pdf/2010.13681>.

Posters

Online specialization of systems with Iridescent.

Vaastav Anand. At Student Research Competition at Symposium on Operating Systems Principles, **SRC @ SOSP 2024**.

Millenial: Modular Microservice Macrobenchmarks.

Vaastav Anand, Antoine Kaufmann, Deepak Garg, Jonathan Mace. At Operating Systems Design and Implementation, **OSDI 2022**.

Millenial: Modular Microservice Macrobenchmarks.

Vaastav Anand. At Student Research Competition at Symposium on Operating Systems Principles, **SRC @ SOSP 2021**.

Millenial: Modular Microservice Macrobenchmarks.

Vaastav Anand. At Eurosys Doctoral Workshop, **EuroDW 2021**.

Sifter: Scalable Sampling for Distributed Traces, without Feature Engineering.

Pedro Las-Casas, Giorgi Papakerashvili, **Vaastav Anand**, Jonathan Mace. At Symposium on Cloud Computing, **SoCC 2019**.

Dara: Hybrid Model Checking of Distributed Systems. **Vaastav Anand**.

At Student Research Competition at The ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering, **SRC @ ESEC/FSE 2018**.

Employment

Research Intern, Microsoft 2024
Azure Research - Systems

- Worked on “Automated Service Design with LLMs” project.
- Mentors: Rodrigo Fonseca, Alok Gautam Kumbhare
- Collaborators: Pedro Las-Casas, Celine Irvine, Jonathan Mace, Gagan Somashekar, Chetan Bansal

Research Intern, MPI-SWS 2019

- Instrumented DeathStarBench applications with XTrace tracing for large-scale experiments for Sifter.

Undergraduate Research Assistant 2018

University of British Columbia, Under Ivan Beschastnikh

- Designed and developed Dara, a tool for model checking distributed systems.

Software Engineering Intern, NVIDIA 2017

MODS (Modular Diagnostics) Team

- Implemented memory repair sequences for faulty High Bandwidth Memory(HBM).
- Designed, developed and implemented a CUDA based full memory stress test.

Software Engineering Intern, NVIDIA 2016

MODS (Modular Diagnostics) Team

- Implemented a synchronization option for CUDA based linpack tests to synchronize CUDA kernel launches within 30us across multiple GPUs.

Software Developer Intern, Thinkbox Software 2015-2016

	Sequoia Team	
	<ul style="list-style-type: none"> Designed, developed and implemented the 3D PDF export option in Sequoia. 	
Teaching	Instructor, Saarland University	2025
	<ul style="list-style-type: none"> Reliability in Modern Cloud Systems 	2025
	Teaching Assistant, Saarland University	2021
	<ul style="list-style-type: none"> 1× TA for Distributed Systems (Core Course) 	2021
	Graduate Teaching Assistant	2018-2020
	University of British Columbia, Department of Computer Science	
	<ul style="list-style-type: none"> 1× TA for Computer Hardware and Operating Systems (CPSC 313) 	2020
	<ul style="list-style-type: none"> 1× TA for Graduate Operating Systems (CPSC 508) 	2019
	<ul style="list-style-type: none"> 1× TA for Distributed Systems (CPSC 416) 	2018
	Academic Assistant	2018
	Vancouver Summer Program	
	<ul style="list-style-type: none"> Teaching Assistant for the Algorithms and the World Wide Web course. 	
	Undergraduate Teaching Assistant	2014-2018
	University of British Columbia, Department of Computer Science	
	<ul style="list-style-type: none"> 1× TA for Introduction to Software Engineering (CPSC 210) 	2018
	<ul style="list-style-type: none"> 1× TA for Advanced Operating Systems (CPSC 415) 	2017
	<ul style="list-style-type: none"> 1× TA for Intermediate Algorithm Design and Analysis (CPSC 320) 	2017
	<ul style="list-style-type: none"> 1× TA for Computer Hardware and Operating Systems (CPSC 313) 	2016
	<ul style="list-style-type: none"> 1× TA for Introduction to Computer Systems (CPSC 213) 	2015
	<ul style="list-style-type: none"> 3× TA for Models of Computation (CPSC 121) 	2014-2015
Awards	3rd Place, Graduate Category, ACM SRC Grand Finals	2025
	1st Place, Graduate Category, SOSP'24 SRC	2024
	SoCC Student Scholarship	2019
	2nd Place, Undergraduate Category, FSE'18 SRC	2018
	SIGSOFT CAPS Award	2018
	UBC International Tuition Award	2018-2019
	Work Learn International Undergraduate Research Award	2018
	UBC Faculty of Science, International Student Award	2015, 2018
	ACM ICPC PacNW Regional Contest Division 2 Champion	2017
	UBC Trek Excellence Scholarship	2016-17, 2017-2018
	UBC Dean's Honor List	2014, 2015, 2017
	UBC Computer Science Student Service Award	2015
	GIIS Global Citizen Scholarship	2011-2013
Service	Academic Service	
	<ul style="list-style-type: none"> Program Committee Member <ul style="list-style-type: none"> EuroSys Posters 2025 CS-Can Student Symposium 2019 	
	<ul style="list-style-type: none"> Organizer <ul style="list-style-type: none"> Tutorial on using Blueprint to accelerate Microservice Research @ SOSP'24 	

	<ul style="list-style-type: none"> – Panel on Reproducibility and Replication @ HotOS'23 • Publicity Chair <ul style="list-style-type: none"> – The Journal of Systems Research 2022-2023. • Systems Trivia Co-Organizer <ul style="list-style-type: none"> – HotOS 2023 – SOSP 2021 – HotOS 2021 • Organization Committee Member <ul style="list-style-type: none"> – The Cornell, Maryland, Max Planck Pre-doctoral Research School (CMMRS) 2022 	
Invited Talks	<p>Blueprint: A Toolchain for Highly-Reconfigurable Microservices Event: CNI Seminar Series @ IISc Bangalore Host: Sreeshma Shiv</p> <p>Jun 2024</p> <p>Blueprint: A Toolchain for Highly-Reconfigurable Microservices Event: Azure Monitor Day of Learning @ Microsoft Redmond Host: Kalyana Sundaram</p> <p>Jun 2024</p> <p>Blueprint: A Toolchain for Highly-Reconfigurable Microservices Event: Trustworthy Systems Seminar @ UNSW Sydney Host: Peter Chubb</p> <p>Aug 2023</p> <p>Blueprint: A Toolchain for Highly-Reconfigurable Microservices Event: Bassar Seminar Series @ University of Sydney Host: Zhanna Sarsenbayeva</p> <p>Aug 2023</p> <p>Millenial: Modular Microservice Macrobenchmarks Event: Tracing Jamboree @ Emory University (virtual) Organizers: Avani Wildani, Ymir Vigfusson</p> <p>Jun 2021</p>	
Skills	<p><i>Programming Languages:</i> C++, Go, Python, C, Bash, JavaScript, Java, CUDA <i>Tools:</i> IntelliJ, GDB, Eclipse, Visual Studio, Git, Perforce, Vim, L^AT_EX</p>	
Selected Non-Research Projects	<p>Distributed Clocks</p> <p>2018-2020</p> <p>Inter-operable vector clock logging library</p> <ul style="list-style-type: none"> • Distributed clocks implements vector clocks in Go, Java, C++ and C • https://github.com/DistributedClocks <p>Datasets</p> <ul style="list-style-type: none"> • Vaastav Anand. Fantasy Premier League Gameweek-By-Gameweek Dataset. https://github.com/vaastav/Fantasy-Premier-League • Vaastav Anand and Jonathan Mace. X-Trace trace dataset for DeathStarBench. https://gitlab.mpi-sws.org/cld/trace-datasets/deathstarbench_traces 	
Interests	<p><i>Computing:</i> Distributed Systems, Operating Systems, Software Engineering <i>Extra Curricular:</i> Soccer, Linguistics, Cricket.</p>	