Vaastav Anand

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Education

PhD, Computer Science 2020-current
Max Planck Institute for Software-Systems (MPI-SWS), Saarbruecken, Germany
Thesis: Human-in-the-loop Specification-Driven Automation for Cloud System Design and Optimization
Advisors: Antoine Kaufmann, Deepak Garg, (past: Jonathan Mace)

MSc, Computer Science 2018-2020
University of British Colombia, Vancouver, Canada
Thesis: Dara the explorer: coverage based exploration for model checking of distributed systems in Go.
Advisor: Ivan Beschastnikh, (2nd Reader: Margo Seltzer)

BSc, Computer Science 2013-2018
University of British Colombia, Vancouver, Canada

Employment

Research Intern, Microsoft 2024
Azure Research - Systems

- Designed and Developed Cerulean, a tool for automatically generating microservice systems from natural language descriptions.
- Mentors: Rodrigo Fonseca, Alok Gautam Kumbhare
- Collaborators: Pedro Las-Casas, Celine Irvene, Jonathan Mace, Gagan Somashekar, Chetan Bansal, Ricardo Bianchini

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 Bandwith Memory(HBM).
- Designed, developed, and implemented a CUDA based full memory stress test for identifying faulty HBM cells.

Software Engineering Intern, NVIDIA 2016
MODS (Modular Diagnostics) Team

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

Software Developer Intern, Thinkbox Software 2015-2016
Sequoia Team

- Designed, developed, and implemented the 3D PDF export feature for point cloud meshes in Sequoia.

Publications

Peer-Reviewed Publications

1. Iridescent: A Framework Enabling Online System Implementation Specialization. **Vaastav Anand**, Deepak Garg, Antoine Kaufmann. Under Review.
2. Intent-Based System Design and Operation. **Vaastav Anand**, Yichen Li, Alok Gautam Kumbhare, Celine Irvene, 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**.
3. 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), **SAA'25**.
4. 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**.
5. Automated Service Design with Cerulean (Project Showcase). **Vaastav Anand**, Alok Kumbhare, Celine Irvene, 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**.
6. 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**.
7. Blueprint: A Toolchain for Highly Reconfigurable Microservice Applications. **Vaastav Anand**, Deepak Garg, Antoine Kaufmann, Jonathan Mace. In Symposium on Operating Systems Principles, **SOSP 2023**.
8. 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**.
9. 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**.
10. 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**.
11. 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

1. SoK: Demystifying the multiverse of MPC protocols. Roberta De Viti, **Vaastav Anand**, Pierfrancesco Ingo, Deepak Garg.
2. 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`.

3. 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`.
4. 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`.
5. 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`.

Datasets

1. X-Trace distributed trace dataset for DeathStarBench. **Vaastav Anand** and Jonathan Mace. `https://gitlab.mpi-sws.org/cld/trace-datasets/deathstarbench_traces`
2. Fantasy Premier League Gameweek-By-Gameweek Dataset. Vaastav Anand. `https://github.com/vaastav/Fantasy-Premier-League`

Teaching

Instructor, Saarland University — 2025

- Reliability in Modern Cloud Systems — 2025

Teaching Assistant, Saarland University — 2021

- 1× TA for Distributed Systems (Core Course) — 2021

Graduate Teaching Assistant — 2018-2020
University of British Coluimbia, Department of Computer Science

- 1× TA for Computer Hardware and Operating Systems (CPSC 313) — 2020
- 1× TA for Graduate Operating Systems (CPSC 508) — 2019
- 1× TA for Distributed Systems (CPSC 416) — 2018

Academic Assistant — 2018
Vancouver Summer Program

- Teaching Assistant for the Algorithms and the World Wide Web course.

Undergraduate Teaching Assistant — 2014-2018
University of British Columbia, Department of Computer Science

- 1× TA for Introduction to Software Engineering (CPSC 210) — 2018
- 1× TA for Advanced Operating Systems (CPSC 415) — 2017
- 1× TA for Intermediate Algorithm Design and Analysis (CPSC 320) — 2017
- 1× TA for Computer Hardware and Operating Systems (CPSC 313) — 2016
- 1× TA for Introduction to Computer Systems (CPSC 213) — 2015
- 3× TA for Models of Computation (CPSC 121) — 2014-2015

Awards

3rd Place, Graduate Category, ACM SRC Grand Finals — 2025
1st Place, Graduate Catgeory, 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

- Program Committee Member
  - SoCC 2026
  - EuroSys Posters 2025
  - CS-Can Student Symposium 2019
- Organizer
  - Tutorial on using Blueprint to accelerate Microservice Research @ SOSP'24
  - Panel on Reproducibility and Replication @ HotOS'23
- Publicity Chair
  - The Journal of Systems Research 2022-2023.
- Systems Trivia Co-Organizer
  - HotOS 2023
  - SOSP 2021
  - HotOS 2021
- Organization Committee Member
  - The Cornell, Maryland, Max Planck Pre-doctoral Research School (CMMRS) 2022

Invited Talks

Blueprint: A Toolchain for Highly-Reconfigurable Microservices — Jun 2024
Event: CNI Seminar Series @ IISc Bangalore
Host: Sreeshma Shiv

Blueprint: A Toolchain for Highly-Reconfigurable Microservices — Jun 2024
Event: Azure Monitor Day of Learning @ Microsoft Redmond
Host: Kalyana Sundaram

Blueprint: A Toolchain for Highly-Reconfigurable Microservices — Aug 2023
Event: Trustworthy Systems Seminar @ UNSW Sydney
Host: Peter Chubb

Blueprint: A Toolchain for Highly-Reconfigurable Microservices — Aug 2023
Event: Basser Seminar Series @ University of Sydney
Host: Zhanna Sarsenbayeva

Millenial: Modular Microservice Macrobenchmarks — Jun 2021
Event: Tracing Jamboree @ Emory University (virtual)
Organizers: Avani Wildani, Ymir Vigfusson

Interests

Computing: Distributed Systems, Operating Systems, Software Engineering
Extra Curricular: Soccer, Linguistics, Cricket.

References

1. Prof. Antoine Kaufmann
   Max Planck Institute for Software Systems
   email: antoinek@mpi-sws.org
2. Prof. Deepak Garg
   Max Planck Institute for Software Systems
   email: dg@mpi-sws.org
3. Dr. Jonathan Mace
   Microsoft
   email: jonathanmace@microsoft.com
4. Dr. Rodrigo Fonseca
   Microsoft
   email: Fonseca.Rodrigo@microsoft.com