

# ANA KLIMOVIC

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<b>ACADEMIC POSITION</b>	<b>Assistant Professor</b> , Department of Computer Science Efficient Architectures and Systems Lab (EASL) Systems Group, <i>ETH Zürich</i> , Switzerland	Aug 2020 -
<b>INTERESTS</b>	Computer system design for cloud computing, data analytics, machine learning.	
<b>EDUCATION</b>	<b>Ph.D. in Electrical Engineering</b> <i>Stanford University</i> , California Thesis: <a href="#">Fast, Elastic Storage for the Cloud</a> Advisor: Christos Kozyrakis	2013 - 2019
	<b>Masters in Electrical Engineering</b> <i>Stanford University</i> , California Advisor: Christos Kozyrakis	2013 - 2015
	<b>Bachelors of Applied Science in Engineering Science</b> <i>University of Toronto</i> , Canada Undergraduate Thesis Advisor: Jason H. Anderson	2009 - 2013
<b>INDUSTRY RESEARCH EXPERIENCE</b>	<b>Google</b> , Mountain View, CA <i>Google Brain</i> , Research Scientist • Research at the intersection of computer systems and machine learning.	July 2019 - Aug 2020
	<b>Microsoft Research</b> , Cambridge, UK <i>Computer Systems and Networking Group</i> , Ph.D. Research Intern Mentors: Eno Thereska and Antony Rowstron • Designed and developed a distributed metadata software system for disaggregated cloud storage racks	June - Sep 2015
	<b>Facebook</b> , Menlo Park, CA <i>Performance and Capacity Engineering</i> , Ph.D. Research Intern Mentor: Binu John • Analyzed the end-to-end performance and cost impact of disaggregating Flash storage from compute resources for production datacenter workloads	June - Sep 2014
<b>AWARDS</b>	<ul style="list-style-type: none"><li>• Facebook Research Award, for RFP: <i>Next-Generation Data Infrastructure</i></li><li>• Google-Initiated Faculty Research Award</li><li>• Memorable Paper Award at NVMW, for <i>ReFlex</i></li><li>• Best Poster Award at Industry-Academia Partnership, for <i>Pocket</i></li><li>• Microsoft Research Fellowship</li><li>• Accel Innovation Scholar</li><li>• Stanford Graduate Fellowship</li></ul>	2021 2020 2018 2018 2015 - 2017 2017 2013 - 2016

- Best Paper Award at OSDI, for *IX* 2014
- W.S. Wilson Medal for Top Ranked Graduate in Engineering Science 2013
- National Sciences and Engineering Research Council of Canada (NSERC) Postgraduate Scholarship 2013
- Craig R. Williams Scholarship Award 2010 - 2012
- University of Toronto Engineering Science Chairs' Scholarship 2011
- Engineering Science Research Opportunity Program Fellowship 2010 - 2011
- University of Toronto Galbraith Scholar 2009
- Canadian Governor General's Academic Medal 2009
- Winner of Canadian National French Public Speaking Competition 2008

## PUBLICATIONS

1. Michael Kuchnik, **Ana Klimovic**, Jiri Simsa, George Amvrosiadis, Virginia Smith. [Plumber: Diagnosing and Removing Performance Bottlenecks in Machine Learning Data Pipelines](#). *Proc. Machine Learning Systems (MLSys'22)*, 2022.
2. Derek G. Murray, Jiri Simsa, **Ana Klimovic**, Ihor Indyk. [tf.data: A Machine Learning Data Processing Framework](#). *Proc. of VLDB'21*, 2021.
3. Dimitris Koutsoukos, Ingo Müller, Renato Marroquín, **Ana Klimovic**, Gustavo Alonso. [Modularis: Modular Relational Analytics over Heterogeneous Distributed Platforms](#). *Proc. of VLDB'21*, 2021.
4. Ashraf Mahgoub, Karthick Shankar, Subrata Mitra, **Ana Klimovic**, Somali Chaterji, Saurabh Bagchi. [SONIC: Application-aware Data Passing for Chained Serverless Applications](#). *Proc. of the USENIX Annual Technical Conference (ATC'21)*, 2021.
5. Jiawei Jiang\*, Shaoduo Gan\*, Yue Liu, Gustavo Alonso, **Ana Klimovic**, Ankit Singla, Wentao Wu, Ce Zhang. [Towards Demystifying Serverless Machine Learning Training](#). *Proc. of International Conference on Management of Data (SIGMOD)*, 2021.
6. Heiner Litz, Javier Gonzalez, **Ana Klimovic**, Christos Kozyrakis. [RAIL: Predictable, Low Tail Latency for NVMe Flash](#). *ACM Transactions on Storage (TOS)*, 2021.
7. Ashraf Mahgoub, Alexander Michaelson Medoff, Rakesh Kumar, Subrata Mitra, **Ana Klimovic**, Somali Chaterji, Saurabh Bagchi. [OPTIMUSCLOUD: Heterogeneous Configuration Optimization for Distributed Databases in the Cloud](#). *Proc. of the USENIX Annual Technical Conference (ATC'20)*, 2020.
8. Ingo Müller, Rodrigo Bruno, **Ana Klimovic**, John Wilkes, Eric Sedlar, Gustavo Alonso. [Serverless Clusters: The Missing Piece for Interactive Batch Applications?](#). *Workshop on Systems for Post-Moore Architectures (SPMA'20)*, 2020.
9. Patrick Stuedi, Animesh Trivedi, Jonas Pfefferle, **Ana Klimovic**, Adrian Schuepbach, Bernard Metzler. [Unification of Temporary Storage in the NodeKernel Architecture](#). *Proc. of the USENIX Annual Technical Conference (ATC'19)*, 2019.
10. **Ana Klimovic**, Yawen Wang, Christos Kozyrakis, Patrick Stuedi, Animesh Trivedi, and Jonas Pfefferle. [Pocket: Elastic Ephemeral Storage for Serverless Analytics](#). *Proc. of Operating Systems Design and Implementation (OSDI'18)*, 2018.

11. **Ana Klimovic**, Yawen Wang, Christos Kozyrakis, Patrick Stuedi, Jonas Pfefferle, and Animesh Trivedi. [Understanding Ephemeral Storage for Serverless Analytics](#). *Proc. of the USENIX Annual Technical Conference (ATC'18)*, 2018.
12. **Ana Klimovic**, Heiner Litz, and Christos Kozyrakis. [Selecta: Heterogeneous Cloud Storage Configuration for Data Analytics](#). *Proc. of the USENIX Annual Technical Conference (ATC'18)*, 2018.
13. **Ana Klimovic**, Heiner Litz, and Christos Kozyrakis. [Learning Heterogeneous Cloud Storage Configuration for Data Analytics](#). *The Conference on Systems and Machine Learning (SysML'18)*, 2018.
14. Sergey Legtchenko, Hugh Williams, Kaveh Razavi, Austin Donnelly, Richard Black, Andrew Douglas, Nathanael Cheriére, Daniel Fryer, Kai Mast, Angela Demke Brown, **Ana Klimovic**, Andy Slowey, and Antony Rowstron. [Understanding Rack-Scale Disaggregated Storage](#). *Proc. of the USENIX Hot Topics in Storage and File Systems (HotStorage'17)*, 2017.
15. **Ana Klimovic**, Heiner Litz, and Christos Kozyrakis. [ReFlex: Remote Flash  \$\approx\$  Local Flash](#). *Proc. of Architectural Support for Programming Languages and Operating Systems (ASPLOS'17)*, 2017. **Memorable Paper Award**.
16. Adam Belay, George Prekas, Mia Primorac, **Ana Klimovic**, Samuel Grossman, Christos Kozyrakis, and Edouard Bugnion. [The IX Operating System: Combining Low Latency, High Throughput, and Efficiency in a Protected Dataplane](#). *ACM Transactions on Computer Systems*, Volume 34, Issue 4, Jan. 2017.
17. **Ana Klimovic**, Christos Kozyrakis, Eno Thereska, Binu John, and Sanjeev Kumar. [Flash Storage Disaggregation](#). *Proc. of European Conference on Computer Systems (EuroSys'16)*, 2016.
18. Adam Belay, George Prekas, **Ana Klimovic**, Samuel Grossman, Christos Kozyrakis, and Edouard Bugnion. [IX: A Protected Dataplane Operating System for High Throughput and Low Latency](#). *Proc. of Operating Systems Design and Implementation (OSDI'14)*, 2014. **Best Paper Award**.
19. **Ana Klimovic** and Jason H. Anderson. [Bitwidth-optimized Hardware Accelerators with Software Fallback](#). *IEEE International Conference on Field-Programmable Technology (FPT'13)*, 2013.

## INVITED TALKS

### Behind the Scenes of Cloud Computing

- *Digital Festival (Keynote)*, Zurich, Sep. 2021

### Ingesting Data Efficiently for Machine Learning

- *Data Infrastructure Tech Talk*, Facebook, Nov. 2021
- *ETH Industry Day*, ETH Zurich, Sep. 2021
- *SIGMOD Curated Session Invited Talk*, SIGMOD, June 2021
- *Microsoft*, Gray Systems Lab, May 2021
- *Industry-Academia Partnership AI Webinar Series*, Mar. 2021

- *FastPath'21*, collocated with ISPASS'21, Mar. 2021
- *Industry-Academia Workshop on Computer Architecture & Deep Learning*, Google, Aug. 2020

### **Systems Research Challenges at the Intersection with Machine Learning**

- *ETH Systems Group Industry Retreat*, Engelberg, Switzerland, Jan. 2020

### **Advice for Academic Interviews**

- *SOSP Diversity Workshop*, Huntsville, ON, Canada, Oct. 2019

### **Fast, Elastic Storage for the Cloud**

- *eBay Research*, San Jose, CA, Apr. 2020
- *Facebook*, Menlo Park, CA, Mar. 2019
- *Google Research*, Mountain View, CA, Feb. 2019
- *Microsoft Research*, Redmond, WA, Feb. 2019

### **Pocket: Elastic Ephemeral Storage for Serverless Analytics**

- *SystemX Alliance Conference*, Stanford, CA, Nov. 2018
- *Google*, Sunnyvale, CA, Oct. 2018
- *Storage Developer Conference*, Santa Clara, CA, Sep. 2018
- *UC Berkeley*, Berkeley, CA, Aug. 2018
- *Samsung*, San Jose, CA, Aug. 2018
- *ETH Zurich*, Zurich, Switzerland, Jun. 2018
- *IBM Research*, Zurich, Switzerland, Jun. 2018
- *Stanford Platform Lab Retreat*, Aptos, CA, Jun. 2018

### **Selecta: Heterogeneous Cloud Storage Configuration for Data Analytics**

- *Samsung*, San Jose, CA, Aug. 2018

### **ReFlex: Remote Flash $\approx$ Local Flash**

- *Non-Volatile Memory Workshop (NVMW)*, San Diego, CA, Mar. 2018
- *Flash Memory Summit*, Santa Clara, CA, Aug. 2017
- *Samsung*, San Jose, CA, Jun. 2017
- *Google*, Sunnyvale, CA, May 2017
- *Databricks*, San Francisco, CA, Mar. 2017
- *Facebook*, Menlo Park, CA, Dec. 2016
- *Industry Academia Partnership (IAP) Workshop*, Stanford, CA, Oct. 2016
- *ETF University of Belgrade*, Belgrade, Serbia, Sep. 2016
- *Google*, Mountain View, CA, Jul. 2016
- *CNEX Labs*, San Jose, CA, Jul. 2016

### **Flash Storage Disaggregation**

- *University of Toronto*, Toronto, Canada, Jul. 2016
- *VMWare*, Palo Alto, CA, Dec. 2015
- *Microsoft Research*, Cambridge, UK, Jul. 2015
- *Stanford Datacenter Computing Retreat*, Santa Cruz, CA, May 2015

### **IX: A Dataplane Operating System for High Throughput and Low-Latency**

- *University of Cambridge*, Cambridge, UK, Jul. 2015

## INVITED PANELS

### Computer Systems Research Directions

- *Serverless Computing Research Panel*, SoCC'20, Oct. 2020

### Career Advice Panels

- *Getting Academic Positions (GAP) Interview Series*, Jul. 2021
- *ETH Postdoc Week*, ETH Zurich, Feb. 2021
- *CSNOW Ask Me Anything*, ETH Zurich, Dec. 2020
- *To PhD or not to PhD: Women in STEM perspectives*, STEMxx Chats, Jul. 2020

## PRESS

1. *Stanford Engineering*. [Ana Klimovic and team win award for work on next-generation memories](#). R. Mozeleski, Apr. 2018.
2. *ACM SIGARCH Computer Architecture Today*. [Recognizing Great Work on Non-Volatile Memories](#). S. Swanson, Mar. 2018.
3. *ZDNet*. [ReFlex: remote storage with local performance in a flash](#). R. Harris, Mar. 2018.
4. *Storage Mojo*. [The Limits of Disaggregation](#). R. Harris, Aug. 2017.
5. *The Next Platform*. [Making remote NVM-Express Flash look local and fast](#). J. Burt, Mar. 2017.

## TEACHING

**Systems Programming & Computer Architecture**, *ETH Zurich* Fall 2020 - 2021

- Bachelor course, co-taught with Prof. Timothy Roscoe

**Cloud Computing Architecture**, *ETH Zurich* Spring 2021 - 2022

- Graduate course, co-teaching with Prof. Gustavo Alonso

**Seminar on Machine Learning Systems**, *ETH Zurich* Fall 2021

- Bachelor seminar, co-taught with Prof. Ce Zhang

**Hardware Acceleration for Data Processing**, *ETH Zurich* Fall 2020

- Graduate seminar, co-taught with Profs. Gustavo Alonso & Ce Zhang

**Distributed Systems Lab**, *ETH Zurich* 2020 - 2021

- Graduate project-based course

**Computer Systems Architecture**, *Stanford University* Winter 2019

- Graduate course, co-taught with Prof. John L. Hennessy

## SERVICE

Program Committees:

- OSDI'22, NSDI'22 (Fall & Spring) 2022
- SOSP'21, ASPLOS'21, HotOS'21, EuroDW'21 2021
- OSDI'20, USENIX ATC'20, VEE'20 2020

External Review Committees:

- MLSys'22 2022
- OSDI'21 2021
- MICRO'20, SoCC'20 2020

Conference Organization Committees:

- ASPLOS'22 Publication Co-Chair 2022
- EuroSys'22 Needham Dissertation Award Committee 2022

- Poster Co-Chair for SOSp'21 2021
  - Sponsorship Chair for SoCC'20 2020
  - Judge for Student Research Competition at SOSp'19 2019
- ETH Zurich Departmental Service
- CS Masters Admission Committee 2022
  - ETH PhD Medals Selection Committee 2021
- Mentorship
- Stanford Women in EE Social Chair and Board Member 2014 - 2019
  - Student Buddy for Stanford EE PhD students 2015 - 2019
  - Community Associate for Stanford Graduate Residences 2014 - 2018
  - NSight Mentor for Engineering Science students 2010 - 2013