

NATACHA CROOKS
Assistant Professor - Computer Science
ncrooks@berkeley.edu

EDUCATION

PhD - Distributed Systems

Supervised by Lorenzo Alvisi

2013 - 2019

University of Texas at Austin, Cornell University, MPI-SWS, University of Cambridge

Certificate of Postgraduate Studies

Supervised by Steven Hand

2012 - 2013

Systems Research Group, Computer Laboratory, Cambridge, UK

Bachelors (Computer Science) - 1st Class Degree - Ranked 1st in year

Dissertation: Data-centric Concurrency Control in Databases

June 2012

University of Cambridge, Cambridge, UK

Double Maitrise (French & British Law) - 2.i - Ranked 1st in French Law

June 2009

University of Cambridge, Cambridge, UK and University Paris 2 - Assas, Paris, France

French Baccalaureate - Scientific Section 18.5/20

June 2008

Ecole Alsacienne, Paris, France

AWARDS AND HONOURS

Sloan Research Fellow, Sloan Foundation

Recognises most promising early career faculty members

March 2025

NSF CAREER Award, National Science Foundation

Recognises most promising early career faculty members

January 2025

ICDE Rising Star Award, ICDE

Recognises early career member for contributions to data engineering

April 2024

Best Paper Award, Eurosys'23

April 2023

VMWare Early Career Award, VMWare Research

Recognises most promising early career faculty members

September 2022

Best Industrial Paper Award, VLDB'21

August 2021

Jim Gray Doctoral Dissertation Award (Honorable Mention),

For best dissertation in the field of database systems, *ACM SIGMOD*

May 2021

Google Research Award,

Technical leadership and achievements in systems research

November 2020

Dennis Ritchie Doctoral Dissertation Award (Winner),

For best dissertation in the field of operating and distributed systems, *ACM SIGOPS*

October 2020

Invitation to the Rising Star Workshop,

For top graduating women in computer science and electrical engineering, *Stanford*

October 2017

Microsoft Research Fellowship for Women in CS,

Awarded to women in computer science, *Microsoft Research*

2016-2017

Harrington Fellowship,

Awarded to outstanding incoming graduate students, *UT Austin*

2015-2020

Google Doctoral Fellowship in Distributed Computing,

Awarded for duration of PhD, *Google*

2014-2017

Redgate Prize for the Best Student, Awarded to the student with the highest marks in the Computer Science Undergraduate Course, *University of Cambridge*

June 2012

Science, Engineering and Technology Student of the Year Awards,

Shortlisted as part of 3 British and Irish undergraduates

London, United Kingdom

September 2012

PEER-REVIEWED PUBLICATIONS

HotOS'25 Real Life is Uncertain. Consensus should be too!
*Reginald Frank, Octavio Eddy Ashton, Amaury Chamayou, **Natacha Crooks***

HotOS'25 Smart Casual Verification of CCF's Distributed Consensus and Consistency Protocols
*Heidi Howard, Markus Kuppe, Eddy Ashton, Amaury Chamayou, **Natacha Crooks***

OSDI'25 Picsou: Enabling Replicated State Machines To Communicate Efficiently
*Reginald Frank, Micah Murray, Ethan Xu, Teddy Tankuranand, Jeremy Yoo, **Natacha Crooks**, Suyash Gupta, Manos Kapritsos*

NSDI'25 Smart Casual Verification of CCF's Distributed Consensus and Consistency Protocols
*Heidi Howard, Markus Kuppe, Eddy Ashton, Amaury Chamayou, **Natacha Crooks***

VLDB'25 TuskFlow: An Efficient Graph Database For Long-Running Transactions
*Georgios Theodorakis, Hugo Firth, James Clarkson, **Natacha Crooks**, Jim Webber*

VLDB'25 Fair Transaction Processing For Multi-Tenant Databases
*Audrey Cheng, Aaron Kabcenell, Xiao Shi, Jolene Huey, Peter Basilis, **Natacha Crooks**, Ion Stoica*

SOSP'24 Autobahn: Seamless high speed BFT
*Neil Giridharan, Florian Suri-Payer, Ittai Abraham, Lorenzo Alvisi, **Natacha Crooks***

DISC'24 Fine-Grained Synchrony
*Neil Giridharan, Ittai Abraham, **Natacha Crooks**, Karthik Nayak, Ling Ren*

SIGMOD'24 Optimizing Distributed Protocols With Query Rewrites
*David Chu, Rithvik Panchapakesan, Shadaj Laddad, Lucky Katahanas, Chris Liu, Kaushik Shivakumar, **Natacha Crooks**, Joseph M. Hellerstein, Heidi Howard*

SIGMOD'24 SkyPIE: A Fast & Accurate Oracle For Object Placement
*Tiemo Bang, Chris Douglas, **Natacha Crooks**, Joseph M. Hellerstein*

CIDR'24 Optimizing the Cloud? Don't Train Models. Build Oracles!
*Tiemo Bang, Conor Power, Siavash Ameli, **Natacha Crooks**, Joseph M. Hellerstein*

VLDB'24 Towards Optimal Transaction Scheduling
*Audrey Cheng, Aaron Kabcenell, Jason Chan, Xiao Shi, Peter Bailis, **Natacha Crooks**, Ion Stoica*

VLDB'24 Mammoths Are Slow: The Overlooked Transactions of Graph Data
*Audrey Cheng, Jack Waudby, Hugo Firth, **Natacha Crooks**, Ion Stoica*

VLDB'24 RALF: Accuracy-Aware Scheduling for Feature Store Maintenance
*Sarah Wooders, Simon Mo, Amit Narang, Kevin Lin, **Natacha Crooks**, Joseph M. Hellerstein, Joseph Gonzalez, Ion Stoica*

PODC'23 BeeGees: Strengthened Liveness in Chained BFT
*Ittai Abraham, **Natacha Crooks**, Neil Giridharan, Heidi Howard, Florian Suri-Payer*

OSDI'23 Take Out the TraChe: Maximising Transactional Cache Hit Rate
*Audrey Cheng, David Chu, Terrance Li, Jason Chan, **Natacha Crooks**, Joseph M. Hellerstein, Ion Stoica, Xiangyao Yu*

NSDI'23 LOCA: A Location-Oblivious Cellular Architecture
*Zhihong Luo, Silvery Fu, **Natacha Crooks**, Shaddi Hasan, Christian Maciocco, Sylvia Ratsanamy, Scott Shenker*

VLDB'23 Keep Calm and CRDT On
*Shadaj Laddad, Conor Power, Mae Milano, Alvin Cheung, **Natacha Crooks**, Joseph M. Hellerstein*

Eurosys'23 Disserting BFT Consensus: In Trusted Components We Trust! (Best Paper Award)
*Suyash Gupta, Sajjad Rahnema, Shubham Pandey, **Natacha Crooks**, Mohammad Sadoghi*

Eurosys'23 Morty: Scaling Concurrency Control with Re-Execution
*Matthew Burke, Florian Suri-Payer, Jeffrey Helt, Lorenzo Alvisi, **Natacha Crooks***

HotNets'22 Reflections on Trusting Distributed Trust
*Emma Dauterman, Vivian Fang, **Natacha Crooks**, Raluca Popa*

DISC'22 Brief Announcement: Siesta: It's not easy to relax. Liveness in BFT Protocols
*Ittai Abraham, **Natacha Crooks**, Neil Giridharan, Heidi Howard, Florian Suri-Payer*

VLDB'22 TAOBench: An End-To-End Benchmark for Social Networking Workloads
*Audrey Cheng, Xiao Shi, Aaron Kabcenell, Shilpa Lawande, Hamza Qadeer, Harrison Tin, Ryan Zhao, Peter Bailis, Mahesh Balakrishnan, Nathan Bronson, **Natacha Crooks**, Ion Stoica*

DSN'22, Treaty: Secure Distributed Transactions
*Dimitra Giantsidi, Maurice Bailleu, Pramod Bhatotia, **Natacha Crooks***

SOSP'21, Basil: Breaking up BFT through ACID (transactions)
*Florian Suri-Payer, Matthew Burke, Yunhao Zhang, Lorenzo Alvisi, **Natacha Crooks***

SOSP'21, Snoopy: Surpassing the scalability bottleneck in oblivious storage
*Emma Dauterman, Vivian Fang, Ioannis Demertzis, **Natacha Crooks**, Raluca Ada Popa*

VLDB'21, RAMP-TAO: Layering Atomic Transactions on Facebook's Online TAO Data Store (Best Paper Award)
*Audrey Cheng, Xiao Shi, Lu Pan, Anthony Simpson, Neil Wheaton, Shilpa Lawande, Nathan Bronson, Peter Bailis, **Natacha Crooks**, Ion Stoica*

CIDR'21 New Directions in Cloud Programming
*Alvin Cheung, **Natacha Crooks**, Joseph Hellerstein, Matthew Milano*

OSDI'18 Obladi: Oblivious Serializable Transactions In The Cloud
***Natacha Crooks**, Matthew Burke, Ethan Cecchetti, Sitar Harel, Lorenzo Alvisi and Rachit Agarwal*

PODC'17 Seeing is Believing: A client-centric specification of database isolation
***Natacha Crooks**, Youer Pu, Lorenzo Alvisi and Allen Clement*

SIGMOD'17, Tebaldi: Taking Modular Concurrency Control To The Next Level
*Chunzhi Su, **Natacha Crooks**, Cong Ding, Lorenzo Alvisi and Chao Xie*

NSDI'17, I Can't Believe it's Not Causal: Scalable Causal Consistency Without Slowdown Cascades
*Akbar Syed Mehdi, Cody Little, **Natacha Crooks**, Lorenzo Alvisi, Nathan Bronson and Wyatt Lloyd*

OOPSLA'17 Geo-Distribution of Actor-based Services
*Phil Bernstein, Sebastian Burckhardt, Sergey Bykov, **Natacha Crooks**, Jose Faleiro, Gabriel Kliot, Alok Kumbhare, Muntasir Raihan Rahman, Vivek Shak, Adriana Szeekeres and Jorgen Thelin*

SIGMOD'16, TARDiS: A Branch and Merge Approach to Weak Consistency
***Natacha Crooks**, Youer Pu, Nancy Estrada, Trinabh Gupta, Lorenzo Alvisi and Allen Clement*

NSDI'16, Popcorn: Scalable and Private Media Consumption
*Trinabh Gupta, **Natacha Crooks**, Whitney Mulhern, Lorenzo Alvisi and Michael Walfish*

Eurosys'15, Musketeer, One for All Data Processing Frameworks
*Ionel Gog, Malte Schwarzkopf, **Natacha Crooks**, Matthew Grosvenor, Allen Clement and Steven Hand*

RELEVANT EXPERIENCE

UC Berkeley, *Assistant Professor*
 Berkeley, USA July 2020 -

- Data Systems and Foundation Group.

Azure Research: Systems and Privacy, *Visiting Researcher*
 Berkeley, USA January 2024 - July 2025

- Work on Confidential Data Management.

Improbable, *Lead Research Consultant*
 London, UK May 2022-December 2022

- Development of a decentralized game financial ecosystem.

Astronomer, *Strategic Advisor*
 Berkeley, USA March 2021-March 2022

- Work on data orchestration and data pipelines.

Materialize Inc., *Technical Advisor*
 New York, USA August 2020 -

- Work on database incremental view maintenance.

Materialize Inc., *Visiting Scientist*
 New York, USA January 2020 - July 2020

- Work on database incremental view maintenance.

Cornell University, *Visiting Researcher*
 Ithaca, USA August 2016-December 2019

- Laboratory for Advanced Systems Research, supervised by Lorenzo Alvisi

- Work on concurrency control for distributed databases.
- Work on oblivious databases and scalable blockchain systems.

INRIA (joint with LIP6/CNRS), Visiting Researcher

Paris, France

May 2016- August 2016

- WHISPER team, supervised by Gilles Muller
- Implementation of a DSL for verified Linux multi-core schedulers

University of Texas at Austin, Graduate Researcher

Austin, USA

August 2015 - May 2016

- Laboratory for Advanced Systems Research, supervised by Lorenzo Alvisi
- Work on weakly consistent geo-distributed storage.
- Work on theoretical foundations for database isolation/consistency.

Microsoft Research, PhD Research Intern

Redmond, USA

May 2015- August 2015

- Data Management and Mining Group, supervised by Phil Bernstein
- Design of a framework for building geo-distributed applications

University of Texas at Austin, Research Scholar

Austin, USA

August 2014 - May 2015

- Laboratory for Advanced Systems Research, supervised by Lorenzo Alvisi
- Work on weakly consistent geo-distributed storage.
- Work on private media streaming systems.

Max Planck Institute For Software Systems, Graduate Researcher

Saarbruecken, Germany

July 2013 - August 2014

- Robust Systems Group, supervised by Allen Clement
- Work on large scale processing systems.

Imperial College, Undergraduate Research Fellowship

London, UK

June 2012-September 2012

- Distributed Systems Group, supervised by Dr. Peter Pietzuch
- Analysis of Lightweight Virtualisation Strategies for Stream-Processing Systems

MPI-SWS, Undergraduate Research Fellowship

Saarbruecken, Germany

June 2011-September 2011

- Dependable Systems Group, supervised by Dr. Rodrigo Rodrigues and Dr. Allen Clement
- Implementation of an eventually consistent centralised MySQL database

Materna GmbH, Research & Development Division, Developer

Dortmund, Germany

June 2010-September 2010

- Developed Bluetooth Support for the JMEDS Framework for Web Services (Java edition for DPWS Stack)

RELEVANT TEACHING EXPERIENCE

Operating Systems (CS162) , UC Berkeley, <i>Co-Instructor</i>	<i>2025</i>
(Grad) Distributed Systems (CS294) , UC Berkeley, <i>Instructor</i>	<i>2024</i>
Operating Systems (CS162) , UC Berkeley, <i>Instructor</i>	<i>2023</i>
Research Culture and Community Norms (CS298) , UC Berkeley, <i>Instructor</i>	<i>2023</i>
(Grad) Distributed Systems (CS294) , UC Berkeley, <i>Instructor</i>	<i>2023</i>
Operating Systems (CS162) , UC Berkeley, <i>Instructor</i>	<i>2022</i>
(Grad) Decentralization Technologies (CS294) , Berkeley, <i>Instructor</i>	<i>2022</i>
Research Culture and Community Norms (CS298) , UC Berkeley, <i>Instructor</i>	<i>2021</i>
(Grad) Privacy-Preserving Systems (CS298) , UC Berkeley, <i>Instructor</i>	<i>2021</i>

Operating Systems (CS162) , UC Berkeley, <i>Co-Instructor</i>	2021
Research Culture and Community Norms (CS294) , UC Berkeley, <i>Instructor</i>	2020
(Grad) Privacy-Preserving Systems (CS298) , UC Berkeley, <i>Instructor</i>	2020
Object-oriented programming and data-structures (CS2110) , Cornell, <i>Instructor</i>	2018
Distributed Computing (CS5414) , Cornell, <i>Teaching Assistant</i>	2016, 2017, 2018
Databases , Second Year Undergraduate Course, Cambridge, <i>Supervisor (Teaching Assistant)</i>	2012-2013
Prolog , Second Year Undergraduate Course, Cambridge, <i>Supervisor (Teaching Assistant)</i>	2012-2013

SERVICE

Program Chair ApSys'25, SIGMOD'25 Artefact Evaluation, PaPOC'24, HotOS'23, Eurosys'24 Artefact Evaluation

Program Committee CIDR'26, HotOS'25, OSDI'25, SOSP'25, OSDI'24, SOSP'24, SIGMOD'24, OSDI'23, Eurosys'23, Eurosys'22, SIGMOD'22, HTPS'22, SOSP'21, HotOS'21, Eurosys'21, FAST'21, OSDI'20, VLDB'20, HotStorage'20, SIGMOD SRC'19 PaPoC'20, OPODIS'19, ICDCS'19, PaPoC'19, SOSP SRC'19, ICDCS'18, PaPoC'18

Poster Chair Eurosys'21, OSDI'20

Journal Reviewer TODS (2023), Distributed Computing (2015)

JOURNALS AND BOOK CHAPTERS

IEEE Data Engineering Bulletin (Dec. 2017), The Dirty Secret of Causal Consistency: Writes
Lorenzo Alvisi, Natacha Crooks, and Akbar Syed Mehdi

Encyclopedia of Big Data Technologies (Book Chapter), TARDiS: A Branch and Merge Approach to Weak Consistency
Natacha Crooks