

HEIDI HOWARD

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RESEARCH INTERESTS

Distributed computer systems, cloud computing, distributed algorithms, formal methods, distributed computing, theory of distributed systems

EDUCATION

PhD in Computer Science *Oct. 2014 - Sept. 2018*

Pembroke College, University of Cambridge, UK

Advisor: Prof. Jon Crowcroft, Thesis title: Distributed consensus revised

BA in Computer Science *Oct. 2010 - June 2014*

Pembroke College, University of Cambridge, UK

Dissertation title: Analysis of Raft consensus

CURRENT APPOINTMENTS

Gott Research Fellow in Computer Science *Oct. 2018 - ongoing*

Trinity Hall,

University of Cambridge, UK

Affiliated Lecturer *Oct. 2019 - ongoing*

Department of Computer Science and Technology,
University of Cambridge, UK

Affiliated Researcher *May 2020 - ongoing*

VMware Research Group,
Palo Alto, California, USA

PREVIOUS APPOINTMENTS

Scholar in Residence *July 2019 - Sept. 2019*

VMware Research Group,
Palo Alto, California, USA

Research Associate *Oct. 2017 - Sept. 2018*

Department of Computer Science and Technology,
University of Cambridge, UK

Research Intern *July 2016 - Oct. 2016*

VMware Research Group,
Palo Alto, California, USA

Summer Intern *June 2014 - Oct. 2014*

Department of Computer Science and Technology,
University of Cambridge, UK

Research Assistant *Sept 2012 - Oct. 2013*

Department of Computer Science and Technology,
University of Cambridge, UK

Undergraduate Researcher *June 2012 - Aug. 2012*

Department of Computer Science and Technology,
University of Cambridge, UK

SELECTED PUBLICATIONS

A complete list of publications including pre-prints, posters, demos and technical reports is available on my personal webpage.

Michael Whittaker, Aleksey Charapko, Joseph M. Hellerstein, Heidi Howard, Ion Stoica

Read-Write Quorum Systems Made Practical

In Proceedings of the 8th Workshop on Principles and Practice of Consistency for Distributed Data (PaPoC), 2021

Andrew Jeffery, Heidi Howard, Richard Mortier

Rearchitecting Kubernetes for the Edge

In Proceedings of the 4th International Workshop on Edge Systems, Analytics, and Networking (EdgeSys), 2021

Chris Jensen, Heidi Howard, and Richard Mortier

Examining Raft's behaviour during partial network failures

In Proceedings of the 1st Workshop on High Availability and Observability of Cloud Systems (HAOC), 2021

Heidi Howard, Aleksey Charapko, Richard Mortier

Fast Flexible Paxos: Relaxing quorum intersection for Fast Paxos

In Proceedings of the 22nd International Conference on Distributed Computing and Networking (ICDCN), 2021

Heidi Howard, Richard Mortier

Paxos vs Raft: Have we reached consensus on distributed consensus?

In Proceedings of the 7th Workshop on Principles and Practice of Consistency for Distributed Data (PaPoC), 2020

Heidi Howard, Dahlia Malkhi, Alexander Spiegelman

Flexible Paxos: Quorum intersection revisited

In Proceedings of the 20th International Conference on Principles of Distributed Systems (OPODIS), 2016

Hamed Haddadi, Heidi Howard, Amir Chaudhry, Jon Crowcroft, Anil Madhavapeddy, Derek McAuley, Richard Mortier

Personal Data: Thinking inside the box

In Proceedings of the 5th decennial Aarhus conference: Critical Alternatives, 2015

Heidi Howard, Malte Schwarzkopf, Anil Madhavapeddy and Jon Crowcroft

Raft refloated: Do we have consensus?

ACM SIGOPS Operating Systems Review (OSR), 2015

Charalampos Rotsos, Heidi Howard, David Sheets, Richard Mortier, Anil Madhavapeddy, Amir Chaudhry, Jon Crowcroft

Lost in the Edge: Finding Your Way with DNSSEC Signposts

In Proceedings of the 3rd USENIX Workshop on Free and Open Communications on the Internet (FOCI), August 2013

TEACHING

Lecturing:

- Advanced Topics in Computer Systems
MEng/MPhil in Advanced Computer Science,
University of Cambridge

Lent 2020 & 2021

Guest Lectures:

- Advanced Topics in Computer Systems *Lent 2017, 2018 & 2019*
MEng/MPhil in Advanced Computer Science,
University of Cambridge
- Pembroke College's Women in Science Residential *Lent 2018*
University of Cambridge
- Research Student Lecture Series *Michaelmas 2015*
MEng/MPhil in Advanced Computer Science,
University of Cambridge

Supervising (Small group teaching):

- Distributed and Concurrent Systems *Michaelmas 2019*
Computer Science Tripos (Part 1B),
University of Cambridge
- Foundations of Computer Science *Michaelmas 2014, 2015 & 2016*
Computer Science Tripos (Part 1A),
University of Cambridge
- Software Engineering *Michaelmas 2015*
Computer Science Tripos (Part 1B),
University of Cambridge
- Sutton Trust Summer School *Summer 2013 & 2014*
University of Cambridge

Miscellaneous:

- Undergraduate admissions interviewer *Michaelmas 2017, 2018, 2019*
Christ's college, University of Cambridge
- Ticker for ML Programming Practicals *Michaelmas 2014 & 2015*
Computer Science Tripos (Part 1A),
University of Cambridge
- Demonstrator for Sutton Trust Summer School *Summer 2013 & 2014*
University of Cambridge
- Training in supervising final year projects, advanced supervising and lecturing *Various*

SERVICE

Chair:

- Co-chair for the Principles and Practice of Consistency Workshop (PaPoC) *2021*
- Area chair of Distributed Consensus for the Journal of Systems Research (JSys) *2021*

Program Committees:

- Posters & Demos for the Special Interest Group on Data Communication (SIGCOMM) *2020*
- Hot Topics in Storage and File Systems Workshop (HotStorage) *2020*
- Principles and Practice of Consistency Workshop (PaPoC) *2020*
- Middleware Doctoral Symposium *2020*
- UK Systems Research Challenges Workshop (UKSys) *2018, 2019, 2020*
- Tiny Transactions on Computer Science (TinyToCS) *2016*

- EuroSys - Shadow 2015

External Reviewer:

- ACM Symposium on Principles of Distributed Computing (PODC) 2017

Committees:

- Department of Computer Science and Technology, University of Cambridge
 - Equality and Diversity 2020 - ongoing
 - Research Staff Forum 2018 - ongoing
 - Group representative for Graduate Student Forum 2014 - 2017
 - Graduate representative for Staff Student Consultative Committee 2014 - 2015
 - Undergraduate representative for Women@CL 2011 - 2014
- Trinity Hall Governing Body 2018 - ongoing
- Treasurer/Communication officer for Stokes Science Society 2011 - 2014
- College representative for Cambridge Student Community Action 2011 - 2012
- Communications officer for Pembroke Players 2010 - 2011

Miscellaneous:

- Interview for the Data Skeptic Podcast Nov. 2020
- Interview for the Algorithms at Work series by Audible Aug. 2020
- Interview for the Computer Science Research Tales July 2019
- Interview for the Software Engineering Radio Podcast Aug. 2019
- Outreach videos on Computerphile:
 - Paxos Agreement (90,000 views) Apr. 2016
 - Consensus & Organising Coffee (60,000 views) Oct. 2015
- System Research Group Talklet Organiser June 2014 - Nov. 2015

INVITED TALKS

Paxos vs Raft: Have we reached consensus on distributed consensus?

- Hydra: Distributed computing conference July 2020
Virtual

Liberating distributed consensus / Distributed consensus revised

- International Workshop on High Performance Transaction Systems (HPTS) Nov. 2019
Pacific Grove, California, USA
- Papers We Love Conference (PWL) Oct. 2019
St. Louis, Missouri, USA
- Hydra: Distributed computing conference July 2019
Saint Petersburg, Russia
- ScaleConf Colombia May 2019
Medellin, Colombia

- Reactive Summit
Montreal, Canada *Oct. 2018*
- Revising the theory of Distributed Consensus: Going Beyond Multi-Paxos**
- ACM SIGOPS Large Scale Distributed Systems and Middleware Workshop (LADIS)
London, UK *July 2018*
- Consensus: Why Can't We All Just Agree?**
- QCon
London, UK *Mar. 2018*
- Constructing scalable, resilient and consistent systems with Flexible Paxos**
- DockerCon
Austin, Texas, USA *Apr. 2017*
 - Systems Research Challenges Workshop
Newcastle, UK *Jan. 2017*
- Flexible Paxos: Revisiting quorum intersection using TLA+**
- Dr TLA+ series, Microsoft Research
Cambridge, UK *Nov. 2016*
- Flexible Paxos: Quorum intersection revisited**
- Systems Research Group Seminar
Cambridge, UK *Nov. 2016*
 - Various venues including Facebook, Docker and VMware
California, USA *Aug.- Sept. 2016*
- Distributed consensus: Making impossible possible**
- CodeMesh
London, UK *Nov. 2016*
 - O'Reilly Open Source Software Conference (OSCON)
London, UK *Oct. 2016*
 - J on the Beach
Malaga, Spain *May 2016*
 - QCon
London, UK *Mar. 2016*
- Ios consensus: Why work when you can delegate?**
- Systems Research Group Seminar
Cambridge, UK *June 2016*
 - VMware Research Group Seminar
Palo Alto, California, USA *July 2016*
- Reaching reliable agreement in an unreliable world**
- Cambridge Tech Talks
Cambridge, UK *Nov. 2015*
- Life on the Edge: New Abstractions for Edge Network Distributed Computing**

- 2nd Oxbridge Women in Computer Science Conference
Oxford, UK

Mar. 2015

REFERENCES

Contact me for references.