

Assistant Professor

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RESEARCH OBJECTIVE

My academic research is focused around data management and distributed systems, and I am particularly interested in socially motivated real-world problems that embody deep trade-offs. My primary interests are on **data replication** (including distributed caching, live streaming and multicast), **data science** and **security**. Other research interests include optimization, network science, wireless ad-hoc networks and epidemiology.

I am also a co-founder and chief science officer of **Syndis**, a growing multinational company focused on **research and services in offensive information security**.

EDUCATION

Cornell University, Ph.D. in Computer Science. February 2010

Advisor: Prof. Ken Birman. Thesis: *Affinity in Distributed Systems*.
Minor: Music composition.

Cornell University, M.Sc. in Computer Science. May 2008

Advisor: Prof. Ken Birman. Topic: *Distributed Slicing*.

University of Iceland, B.Sc. in Mathematics (with Distinction). May 2005

Final project: *Greedy Approximation Algorithms for Sum Coloring of Interval Graphs*.
Advisor: Prof. Magnus M. Halldorsson.
Minor: Computer Science.

RESEARCH AND WORK EXPERIENCE

Emory University, Atlanta, GA. *Assistant Professor*. September 2014–present

Lead the Emory Systems Lab and co-lead the SimBioSys group in the Department of Mathematics and Computer Science, where I supervise undergraduate and graduate students on research into distributed systems, data science and security.

Syndis, Reykjavik, Iceland. *Co-founder and Chief Science Officer*. March 2013–present

Co-founded a start-up company in the computer security space to drive custom security innovation and bespoke attack solutions for leading companies with demanding security needs. I lead the company's research strategy which is a central component of the Syndis vision and a core driver for the innovative solutions we deliver to our clients.

Reykjavik University, Reykjavik, Iceland. *Adjunct Assistant Professor*. June 2011–present

Assistant Professor from 2011 to 2014 where I led the RU Systems Lab and co-founded the RU Center of Research in Engineering Software Systems (CRESS). Taught courses Operating Systems and Networking, Computer Security and Structure of Information Networks in the School of Computer Science, and supervised dozens of B.Sc, M.Sc and Ph.D. students on distributed systems research. Adjunct since 2014, where I teach a 3-week version of the Computer Security course every summer.

Technion Israel Institute of Technology, Haifa, Israel. *Visiting Professor*. November–December 2012

Invited by the Technion Computer Engineering Center to collaborate on live streaming system research. Host: Prof. Daniel M. Freedman.

IBM Research, Haifa, Israel. *Post-doctoral Scientist.* September 2009–June 2011

Systems research in the Distributed Middleware group. Researched multi-tenant caching services and devised algorithms to improve the performance and feature set for the caching component of IBM's eXtremeScale network caching appliance. Improved the scalability of multicast protocols for data centers (Dr. Multicast) and over wide-area networks (Magnet and GO). Researched event-based systems to defend the financial infrastructure against large-scale, coordinated attacks (CoMiFin). Supervisor: Dr. Eliezer Dekel.

IBM Research, Haifa, Israel. *Visiting Scientist.* January 2009

Integrated Dr. Multicast with the IBM WebSphere VE communications layer prototype. Devised a novel optimization algorithm based on a model from a real-world trace of the system. Supervisor: Dr. Gregory Chockler.

Yahoo! Research, Santa Clara, CA. *Research Intern.* Summer 2008

Developed, analyzed and implemented a novel approach for performing range queries in a scalable fashion on a massive distributed data storage system (PNUTS). The internship resulted in production software that is still in use, a publication (VLDB 2009) and two patents. Supervisor: Dr. Brian Cooper.

Iceland Genomics Corporation, Reykjavik, Iceland. *Research Intern.* Summer 2004

Devised and implemented a very fast search algorithm and web engine for identifying all binding sites for short primer pairs in the human genome based on approximate string matching. Supervisor: Prof. Magnus M. Halldorsson.

Tal (ISP), Reykjavik, Iceland. *System Administrator.* 1999-2003

Engineered and maintained a low-level distributed e-mail service for about 30,000 users (100,000 e-mail accounts). Designed and implemented various systems and interfaces to facilitate system administration.

Qualys Technologies, Paris, France. *Software Security Specialist.* Summer 2001

Discovered and mitigated security vulnerabilities in commonly used software. Performed security software research and development.

AWARDS AND HONORS

Best Student Paper award, at *ACM International Systems and Storage Conference (SYSTOR)*, Israel. June 2016

Awarded **Google Cloud Credits** grant for furthering cybersecurity education (\$10,000). November 2014–2015

Best Student Paper award, at *IEEE Sensors Applications Symposium (SAS)*, Brescia, Italy. February 2012.

Nominated for the **ACM Doctoral Dissertation Award**. October 2010

Yahoo! Key Technical Challenges Research Grant. February 2008

Fulbright Scholarship from the Icelandic Fulbright Commission. 2005–2009

GRANTS AND CONTRACTS

NSF CAREER Award, PI (\$552,532). 2016–2020

PI: Dr. Ymir Vigfusson.
 Proposal title: "Rethinking the Cache Abstraction".
 Includes \$15,993 REU supplement for two undergraduate students.
 Highest ranked CAREER proposal in CISE CNS in 2015.

Contract from **Center for Disease Control** (CDC), PI (\$69,998). 2016

PI: Dr. Ymir Vigfusson.

Contract title: “Developing Clustering Algorithms for Measuring Malaria Multiplicity of Infection”.

Grant from Emory’s **University Research Committee**, PI (\$40,000). May 2015–2016

Proposal title: “Detecting Outbreaks with Cell Phone Data”.

PIs: Drs. Ymir Vigfusson and Gari Clifford.

Research Project Grant from the Iceland Research Council, PI (\$198,000). January 2015–2018

Proposal title: “Detecting Epidemics with Mobile Phone Data”.

PI: Dr. Ymir Vigfusson.

Grant of Excellence from the Iceland Research Council, co-PI (\$330,000). January 2012–2016

Proposal title: “Designing Wireless Ad-Hoc Networks”.

PI: Dr. Magnus M. Halldorsson (Reykjavik University).

I led the work package “Distributed computing problems involving a combination of wired and wireless networks.

TEACHING EXPERIENCE

Emory University, Atlanta, GA. *Assistant Professor*. 2014–current

Computer Security (CS485/CS453, Fall 2014–2016, 12–28 students). A full semester course developed by me on the practical aspects of computer security, including advanced control-flow bypass and other attack vectors, and means to mitigate attacks.

Computer Security (graduate) (CS584, Fall 2016, 4 students). A full semester course piggybacked with CS453, providing extensive hands-on experience with binary exploitation and further covering recent academic papers in computer security.

Computer Science II (CS171, Spring 2015/2016/2017, 64/35/40 students). An introductory course on data structures and algorithms in Java. Redesigned the course to focus on automatically graded homework projects.

Network Science (graduate) (CS584, Spring 2015, 15 students). Graduate course developed by me on the fundamentals and applications of network and graph theory applied to large-scale networks.

Reykjavik University, Reykjavik, Iceland. *Assistant Professor*. 2011–2016

Offensive Computer Security (T-417-TOOR, Spring 2012–2016, 6 ECTS, 20-30 students). A novel 3-week intensive course about practical aspects of computer security, including advanced buffer overflows and other attack vectors, and means to mitigate attacks. Teaching evaluation: 4.7/5 (2012).

Operating Systems and Networking (T-STNE-408/T-STY1-213, Spring 2012/2013/2014, 6 ECTS, 100-200 students). A course designed by me based on CMU’s 15213 course, covering a practical approach to operating systems and UNIX using the textbook *Computer Systems: A Programmer’s Perspective* by Bryant and O’Hallaron (2010). Teaching evaluation: 4.6/5 (2012)

Structure of Information Networks (T-SINE-214, Summer 2011; Spring 2014, 6 ECTS, 10-20 students). Designed from scratch based on the textbook *Networks, Crowds and Markets* by Easley and Kleinberg (2010). Teaching evaluation: 4.4/5 (2011).

Cornell University, Ithaca, New York. *Instructor*. 2008

Advanced UNIX (CS214, Spring 2008, 20 students). Designed the curriculum and homeworks from scratch. Taught Python, common UNIX utilities, shell scripts and Perl. Received favorable course evaluation from 95% (18/20) of the students.

Cornell University, Ithaca, New York. *Teaching Assistant*. 2005–2007

Discrete Mathematics (CS280, Fall 2005, Prof. Jon Kleinberg),
Analysis of Algorithms (CS482, Spring 2006, Prof. Paul Chew; Spring 2007, Dr. Tom Wexler),
Graduate Analysis of Algorithms (CS681, Fall 2006, Prof. Éva Tardos),
Data Structures and Functional Programming (CS312, Fall 2007, Prof. Radu Rugina).
 Received a Departmental TA-Award for Discrete Mathematics.

University of Iceland, Reykjavik, Iceland. *Teaching Assistant*. 2003–2004

Discrete Mathematics (08.71.23, Fall 2003 and Fall 2004, Prof. Hjalmtyr Hafsteinsson),
Data Structures and Algorithms (08.71.14, Spring 2004, Prof. Hjalmtyr Hafsteinsson).

Student mentorship.

I have advised 20 undergraduate students on research, including 3 Honors projects; 16 masters level students (including M.S., M.Eng. and M.P.H.) on research projects of which 8 have defended their theses or final projects under my supervision; 2 post-doctoral researchers; and 12 Ph.D. students of which 8 are currently pursuing research projects with me, one completed their Ph.D. under my full supervision (Kristjan V. Jonsson), one was advised by me as a committee member (Xiaofeng Xu) and two were unofficially advised by me (at Cornell and the Technion).

PATENTS

IBM Research. *Allocation Enforcement in a Multi-Tenant Cache Mechanism.* 2014 (published)

With Gregory Chockler, Guy Laden and Benjamin M. Pares. United States Patent Application #20130138891.

IBM Research. *Cache Optimization Via Predictive Cache Size Modification.* 2014 (published)

With Gregory Chockler and Guy Laden. United States Patent Application #20130138889.

Yahoo! Research. *Adaptive Resource Allocation for Parallel Execution of Range Query.* 2010 (published)

With Rodrigo Fonseca, Brian Frank Cooper and Adam Silberstein. United States Patent Application #20100332660.

Yahoo! Research. *Parallel Execution of Range Query.* 2010 (published)

With Adam Silberstein and Brian Frank Cooper. United States Patent Application #20100082655.

PROFESSIONAL SERVICE

Program Committee Member of the 8th ACM SIGOPS/SIGMOD Symposium on Cloud Computing (**SOCC'17**), Seattle, WA. November 2014.

Program Committee Member (Distributed Fault Tolerance and Dependability track) of the 37th IEEE International Conference on Distributed Computing Systems (**ICDCS'17**), Atlanta, GA. June 2017.

Program Committee Member and Registration Chair of the 7th ACM SIGOPS/SIGMOD Symposium on Cloud Computing (**SOCC'16**), San Francisco, CA. October 2016.

NSF panel reviewer (2015–2016).

General Co-chair of the 8th ACM SIGOPS Workshop on Large-scale Distributed Systems and Middleware (**LADIS'15**) workshop, Monterey, CA. October 2015.

Program Committee Member of the 15th IEEE International Conference on Peer-to-Peer Computing (**P2P'15**), Cambridge, MA. September 2015.

Program Committee Member of the 6th ACM SIGOPS/SIGMOD Symposium on Cloud Computing (**SOCC'15**), Big Island, HA. August 2015.

Program Committee Member (Track C) of the 42nd International Colloquium on Automata, Languages and Programming (**ICALP'15**), Kyoto, Japan. July 2015.

Program Committee Member of the 45th Annual IEEE/IFIP International Conference on Dependable Systems and Networks (**DSN'15**), Rio de Janeiro, Brazil. June 2015.

Program Committee Member of the 9th Annual EuroSys Doctoral Workshop (**EuroDW'15**), Seattle, WA. April 2015.

Program Committee Member of the 5th ACM SIGOPS/SIGMOD Symposium on Cloud Computing (**SOCC'14**), Seattle, WA. November 2014.

General Co-chair of the 7th Workshop on Large-scale Distributed Systems and Middleware (**LADIS'14**) workshop, Cambridge, UK. October 2014.

Program Committee Member of the 14th IEEE International Conference on Peer-to-Peer Computing (**P2P'14**), London, UK. September 2014.

Program Committee Member of the 7th ACM International Systems and Storage Conference (**SYSTOR'14**), Haifa, Israel. June 2014.

Poster Program Committee Member of the European Conference on Computer Systems (**EuroSys'14**). Amsterdam, The Netherlands. April 2014.

General Co-chair of the 6th ACM SIGOPS Large-scale Distributed Systems and Middleware (**LADIS'13**) workshop, Farmington, PA. November 2013.

Program Committee Member of the 13th IEEE International Conference on Peer-to-Peer Computing (**P2P'13**), Trento, Italy. September 2013.

Program Committee Member of the European Conference on Computer Systems (**EuroSys'13**), Prague, Czech Republic. April 2013.

Program Committee Member of the 12th IEEE International Conference on Peer-to-Peer Computing (**P2P'12**), Tarragona, Spain. September 2012.

Program Committee Member of the 17th Nordic Conference on Secure IT Systems (**Nordsec**), Karlskrona, Sweden. October 2012.

Program Committee Member and General Co-chair of the 6th ACM SIGOPS/SIGACT Workshop on Large-Scale Distributed Systems and Middleware (**LADIS**) workshop, Madeira, Portugal. July 2012.

Program Committee Member of the TERENA Networking Conference (**TNC**), Reykjavik, Iceland. May 2012.

General Co-chair of the 5th VLDB Large-scale Distributed Systems and Middleware (**LADIS**) workshop, Seattle, WA. September 2011.

General Co-chair of the 4th ACM SIGOPS/SIGACT Large-scale Distributed Systems and Middleware (**LADIS**) workshop, Zürich, Switzerland. July 2010.

External reviewer for Science (2013), IEEE Transactions on Networking (ToN) (2011-2013), ACM Computing Surveys (2010), Lecture Notes in Computer Science (2010) and the International Symposium on Distributed Computing (DISC) (2009,2010).

PEER-REVIEWED PUBLICATIONS

Notes: Each paper title is a hyperlink to a PDF copy of the article.

Co-authors marked with * were students working under my direct supervision.

Co-authors marked with \diamond were more junior student collaborators.

1. H. Sigurbjarnarson*, P.O. Ragnarsson*, J. Yang*, **Y. Vigfusson**, M. Balakrishnan. *Enabling Space Elasticity in Storage Systems*. **Best Student Paper**. In *Proc. 9th ACM International Systems and Storage Conference (SYSTOR)*, Haifa, Israel. June 2016.

2. R. Friedman, A. Libov, **Y. Vigfusson**. *Distilling the Ingredients of P2P Live Streaming Systems*. In *Proc. International Conference on Peer-to-Peer Computing (P2P)*, Cambridge, MA. September 2015.
3. H. Johansen, R. van Renesse, **Y. Vigfusson**, D. Johansen. *Fireflies: Secure and Scalable Membership and Gossip Service*. In *ACM Transactions on Computer Systems (TOCS)* 33(2) 5:1–5:32. April 2015. My contributions included the theoretical analysis of the system.
4. P. Rovelli*, Y. Vigfusson. *PMDS: Permission-based Malware Detection System*. In *International Conference on Information Systems Security (ICISS)*, Hyderabad, India. December 2014.
5. T. Saemundsson*, H. Bjornsson*, G. Chockler, Y. Vigfusson. *Dynamic Performance Profiling of Cloud Caches*. In *Proc. ACM Symposium on Cloud Computing (SOCC)*, Seattle, WA. November, 2014.
6. Q. Huang[◊], H. Gudmundsdottir*, **Y. Vigfusson**, D. Freedman, K. Birman, R. van Renesse. *Characterizing Load Imbalance in Real-World Networked Caches*. In *Proc. ACM Workshop on Hot Topics in Networks (Hotnets)*, Los Angeles, CA. October, 2014.
7. H. Gudmundsdottir*, E.I. Ásgeirsson, M.H.L. Bodlaender, J.T. Foley, M.M. Halldorsson, **Y. Vigfusson**. *Extending Wireless Algorithm Design to Arbitrary Environments via Metricity* In *Proc. ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM)*, Montreal, Canada. September, 2014
8. H. Sigurbjarnarson*, P.O. Ragnarsson*, **Y. Vigfusson**, M. Balakrishnan. *Harmonium: Elastic Cloud Storage via File Motifs*. In *Proc. USENIX Workshop on Hot Topics in Storage and File Systems (HotStorage)*, Philadelphia, PA. June, 2014.
9. R. Friedman, A. Libov, **Y. Vigfusson**. *MOLStream: A Modular Rapid Development and Evaluation Framework for Live P2P Streaming*. In *Proc. International Conference on Distributed Computing Systems (ICDCS)*, Madrid, Spain. June, 2014.
10. H. Abu-Libdeh, R. van Renesse, **Y. Vigfusson**. *Leveraging Sharding in the Design of Scalable Replication Protocols*. In *Proc. Symposium on Cloud Computing (SOCC)*, Santa Clara, CA. October, 2013.
11. E.I. Asgeirsson, M.M. Halldorsson, P. Mitra, J. Foley, H. Gudmundsdottir*, S.F. Kristjansson*, S. Magnusson*, H. Ulfarsson, **Y. Vigfusson**, *Distributed Scheduling for Data Aggregation in Wireless Networks*. In *11th Workshop on Models and Algorithms for Planning and Scheduling Problems (MAPSP)*, Pont à Mousson, France. June, 2013.
12. K.V. Jonsson*, **Y. Vigfusson**. *Robust Authentication in Trusted Sensing Networks with Physically Uncloneable Functions*. In *17th Nordic Conference in Secure IT Systems (NordSec)*. October, 2012. (Short paper).
13. **Y. Vigfusson**, K. Birman, D.A. Freedman, Q. Huang[◊], K.V. Jonsson*, G. Sigurbjornsson*. *Live Streaming with Utilities, Quality and Cost*. In *Proc. Principles of Distributed Computing (PODC)*, Madeira, Portugal. July 2012. (Brief announcement).
14. K.V. Jonsson*, K. Palmkog, **Y. Vigfusson**. *Secure Distributed Top-k Aggregation*. In *IEEE International Conference on Communications (ICC)*, Ottawa, Canada. June, 2012.
15. K.V. Jonsson*, **Y. Vigfusson**, O.R. Helgason. *Simulating Large-Scale Dynamic Random Graphs in OMNeT++*. In *5th International Workshop on OMNeT++ joint with SIMUTools*, Desenzano, Italy. March, 2012.
16. K.V. Jonsson*, **Y. Vigfusson**. *Bootstrapping Trust in Networked Measurement Systems with Secure Sensors*. **Best Student Paper**. In *IEEE Sensors Applications Symposium (SAS)*, Brescia, Italy. February 2012.
17. R. Guerraoui, K. Huguenin, A-M. Kermarrec, M. Monod, **Y. Vigfusson**. *Decentralized Polling with Respectable Participants*. In *Journal of Parallel and Distributed Computing*, 72(1) (JPDC). January, 2012.
18. G. Chockler, G. Laden, **Y. Vigfusson**. *Design and Implementation of Caching Services in the Cloud*. In *IBM Journal of Research and Development* 55(4). December, 2011.
19. K.V. Jonsson*, **Y. Vigfusson**. *Securing Distributed Aggregation with Trusted Devices*. In *16th Nordic Conference in Secure IT Systems (NordSec)*. October, 2011. (Short paper)
20. R. Melamed, G. Laden, **Y. Vigfusson**. *Adaptive and Dynamic Funnel Replication in Clouds*. In *Proc. ACM Workshop on Large-Scale Distributed Systems and Middleware (LADIS)*, Seattle, WA. July, 2011.
21. Q. Huang[◊], D. Freedman, **Y. Vigfusson**, K. Birman, B. Peng. *Kevlar: A Flexible Infrastructure for Wide-Area Collaborative Applications*. In *Proc. ACM/IFIP/USENIX 11th International Conference on Middleware*, Bangalore, India. November 2010.

22. G. Chockler, G. Laden, **Y. Vigfusson**. *Data Caching as a Cloud Service*. In *Proc. ACM Workshop on Large-Scale Distributed Systems and Middleware (LADIS)*, Zürich, Switzerland. July 2010.
23. D. Basin, K. Birman, I. Keidar, **Y. Vigfusson**. *Sources of Instability in Data Center Multicast*. In *Proc. ACM Workshop on Large-Scale Distributed Systems and Middleware (LADIS)*, Zürich, Switzerland. July 2010.
24. D. Basin, K. Birman, I. Keidar, **Y. Vigfusson**. *Sources of Instability in Data Center Multicast*. In *Proc. Principles of Distributed Computing (PODC)*, Zürich, Switzerland. July 2010. (Brief announcement).
25. Q. Huang[◊], **Y. Vigfusson**, K. Birman, H. Li^{*}. *Quilt: A Patchwork of Multicast Regions*. In *Proc. ACM International Conference on Distributed Event-Based Systems (DEBS)*, Cambridge, UK. July 2010.
26. S. Girdzijauskas, G. Chockler, **Y. Vigfusson**, Y. Tock, R. Melamed. *Magnet: Practical Subscription Clustering for Internet-Scale Publish/Subscribe*. In *Proc. ACM International Conference on Distributed Event-Based Systems (DEBS)*, Cambridge, UK. July 2010. My contributions included writing the paper.
27. **Y. Vigfusson**, H. Abu-Libdeh, M. Balakrishnan, R. Burgess, K. Birman, G. Chockler, H. Li, Y. Tock. *Dr. Multicast: Rx for Data Center Communication Scalability*. In *Proc. European Conference on Computer Systems (EuroSys)*, Paris, France. April 2010.
28. V. Gramoli[◊], **Y. Vigfusson**, K. Birman, A.M. Kermarrec, R. van Renesse. *Slicing Distributed Systems*. In *IEEE Transactions on Computers* 58(11). November 2009.
29. **Y. Vigfusson**, Q. Huang, K. Birman, D. Nataraj. *GO: Platform Support For Gossip Applications*. In *Proc. ACM Workshop on Large-Scale Distributed Systems and Middleware (LADIS)*, Big Sky, MT. October 2009.
30. **Y. Vigfusson**, Q. Huang, K. Birman, D. Nataraj. *GO: Platform Support For Gossip Applications*. In *Proc. International Conference on Peer-to-Peer Computing (P2P)*, Seattle, WA. September 2009.
31. **Y. Vigfusson**, A. Silberstein, B. Cooper, R. Fonseca. *Adaptively Parallelizing Distributed Range Queries*. In *Proc. International Conference on Very Large Data Bases (VLDB)*, Lyon, France. August 2009.
32. **Y. Vigfusson**, H. Abu-Libdeh, M. Balakrishnan, K. Birman, Y. Tock. *Dr. Multicast: Rx for Data Center Communication Scalability*. In *Proc. ACM Workshop on Hot Topics in Networks (Hotnets-VII)*, Alberta, Canada. October 2008.
33. V. Gramoli[◊], **Y. Vigfusson**, K. Birman, A.M. Kermarrec, R. van Renesse. *Sliver: A Fast Distributed Slicing Algorithm*. In *Proc. Principles of Distributed Computing (PODC)*, Toronto, Canada. August 2008. (Brief announcement).
34. B. Wong, **Y. Vigfusson**, E.G. Sirer. *Hyperspaces for Object Clustering and Approximate Matching in Peer-to-Peer Overlays*. In *Proc. ACM Workshop on Hot Topics in Operating Systems (HotOS-XI)*, San Diego, CA. May 2007.

OTHER PUBLICATIONS AND POSTERS

1. H. Yoon^{*}, **Y. Vigfusson**, A. Gavrilovska. *Multi-Temperature LSM Tree-Based Database Storage*. (Poster and presentation). In *15th USENIX Conference on File and Storage Technologies (FAST)*, Santa Clara, CA. February 2017.
2. J. Yang^{*}, R. Karimi^{*}, **Y. Vigfusson**. *A Simple Cache Prefetching Layer Based on Block Correlation*. (Poster and presentation). In *15th USENIX Conference on File and Storage Technologies (FAST)*, Santa Clara, CA. February 2017.
3. H. Yoon^{*}, **Y. Vigfusson**, A. Gavrilovska. *Multi-Temperature LSM Tree-Based Database Storage*. (Poster). In *12th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Savannah, GA. November 2016.
4. X. Chen^{*}, **Y. Vigfusson**, D. Blough, F. Zheng, K-L. Wu, L. Hu. *Smoother Stream Processing Through Smarter Back Pressure*. (Poster). In *12th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Savannah, GA. November 2016.
5. J. Yang^{*}, R. Karimi^{*}, **Y. Vigfusson**. *Mithril: Mining block correlation for cache prefetching*. (Poster). In *12th USENIX Symposium on Operating Systems Design and Implementation (OSDI)*, Savannah, GA. November 2016.
6. H. Sigurbjarnarson^{*}, P.O. Ragnarsson^{*}, J. Yang^{*}, **Y. Vigfusson**, M. Balakrishnan. *Enabling Space Elasticity in Storage Systems*. (Poster). In *9th ACM International Systems and Storage Conference (SYSTOR)*, Haifa, Israel. June 2016.
7. H. Bjornsson^{*}, G. Chockler, T. Saemundsson^{*}, **Y. Vigfusson**. *Dynamic Performance Profiling for Cloud Caches*. (Poster). In *Proc. Symposium on Cloud Computing (SOCC)*, Santa Clara, CA. October, 2013.
8. **Y. Vigfusson**, A. Liu^{*}, W. Liu^{*}, Y. Zhu^{*}, G. Sigurbjornsson^{*}, K.V. Jonsson^{*}, Q. Huang[◊], K. Birman, D.A. Freedman. *Live Network Streaming with Utilities and Cost*. In *6th ACM SIGOPS/SIGACT Workshop on Large-Scale Distributed Systems and Middleware (LADIS)*, Madeira, Portugal. July 2012. (Invited).

9. **Y. Vigfusson**, A. Liu*, W. Liu*, Y. Zhu*, G. Sigurbjornsson*, K.V. Jonsson*, Q. Huang[◊], K. Birman, D.A. Freedman. *Gradient: Balancing Cost and User Utility for Live Network Streaming* At 3rd ACM SIGOPS Asia-Pacific Workshop on Systems (APSys), Seoul, South Korea. July 2012. (Poster).
10. L. Aniello, R. Baldoni, G. Chockler, G. Laventman, G. Lodi, **Y. Vigfusson**. *Distributed Attack Detection Using Agilis*. Chapter in the book *Collaborative Financial Infrastructure Protection: Tools, Abstractions and Middleware*. Springer (ISBN 987-3-642-20419-7). January, 2012.
11. M. Marchetti, M. Colajanni, M. Messor, L. Aniello, **Y. Vigfusson**. *Cyber Attacks on Financial Critical Infrastructures*. Chapter in the book *Collaborative Financial Infrastructure Protection: Tools, Abstractions and Middleware*. Springer (ISBN 987-3-642-20419-7). January, 2012.
12. R. Melamed, G. Laden, **Y. Vigfusson**. *Adaptive and Dynamic Funnel Replication in Clouds*. In *SIGOPS Operating Systems Review (OSR)* 46(1). January 2012. (Invited).
13. **Y. Vigfusson**, Q. Huang[◊], K. Birman, D. Nataraj*. *GO: Platform Support For Gossip Applications*. In *SIGOPS Operating Systems Review (OSR)* 44(2). April 2010. (Invited).
14. **Y. Vigfusson**, G. Chockler. *Clouds at the Crossroads: Research Perspectives and Challenges*. In *ACM Crossroads* 16(3), March 2010. (Invited).
15. **Y. Vigfusson**, H. Abu-Libdeh*, M. Balakrishnan, K. Birman, G. Chockler, Y. Tock. *Dr. Multicast: Harnessing IP Multicast in Data Centers*. **Best Poster Award**. At *USENIX Symposium on Networked Systems Design and Implementation (NSDI)*, Boston, MA. April 2009. (Poster)
16. **Y. Vigfusson**, H. Abu-Libdeh*, M. Balakrishnan, K. Birman, Y. Tock. *Dr. Multicast: Rx for Data Center Communication Scalability*. In *Proc. Workshop on Large-Scale Distributed Systems and Middleware (LADIS)*, White Plains, NY. September 2008.
17. M.M. Halldorsson, H. Thorgeirsson, **Y. Vigfusson**, H.G. Thormar, J.J. Jonsson. *CATTAGAT: Web Server for Primer Specificity Scan*. At *Genome Informatics Workshop (GIW)*, Yokohama, Japan. December 2004. (Poster).

SELECTED PRESENTATIONS

1. *Why You Should Think Like a Hacker*. Keynote address: NZZ X.Days Conference, Interlaken, Switzerland: March 27, 2017.
2. *Profiling In-memory Caches Dynamically*. Invited Systems Lunch: Cornell University, Ithaca, NY: September 30, 2016.
3. *Using Competitions to Drive Innovation in Finance*. Invited speaker: RB National Conference, Reykjavik, Iceland: May, 2016.
4. *Thinking Like a Hacker*. EUMMA talk: Emory University, Atlanta, GA: March, 2016.
5. *Dynamic Performance Profiling of In-Memory Caches*. Colloquium: University of Arizona, Tucson, AZ: January, 2016.
6. *Elastic Cloud Storage*. Invited talk: Facebook, Menlo Park, CA: August, 2015.
7. *Elastic Cloud Storage*. Seminar: University of South California (USC), Los Angeles, CA: July, 2015.
8. *Dynamic Performance Profiling of Cloud Caches*. SOCC '14: Seattle, WA: November 4, 2014.
9. *Harmonium: Elastic Cloud Storage via File Motifs*. HotStorage '14: Philadelphia, PA: June 17, 2014.
10. *Why I Teach People How to Hack*. TEDxReykjavik: Reykjavik, Iceland: May 17, 2014. **Over 1,000,000 views as of Dec. 1 2016.**
11. *Dynamic Performance Profiling of Memory Caches*. Math&CS Colloquium: Emory University, Atlanta, GA: February 24, 2014.
12. *Dynamic Performance Profiling of Memory Caches*. Invited seminar: Georgia Institute of Technology, Atlanta, GA: December 5, 2013.
13. *Dynamic Performance Profiling of Memory Caches*. Invited seminar: Facebook Headquarters, Menlo Park, CA: October 8, 2013.
14. *Dynamic Performance Profiling of Memory Caches*. Invited seminar: Twitter Headquarters, San Francisco, CA: October 8, 2013.

15. *Dynamic Performance Profiling for Cloud Caches*. Invited seminar: Cloudphysics, Mountain View, CA: October 7, 2013.
16. *The Bitter Truth: You Are Always Insecure*. UT-messan IT Conference: Reykjavik, Iceland: February 7, 2013.
17. *How Alan Turing Cracked the Enigma Code*. IBM Research Invited Seminar: Haifa, Israel: December 4, 2012.
18. *How Alan Turing Cracked the Enigma Code*. Technion CSE Colloquium: Haifa, Israel: December 3, 2012.
19. *Optimized Networked Systems* Technion TCE Guest Lecture. Haifa, Israel: November 5, 2012.
20. *Gradient: Live Network Streaming with Utilities and Cost*. LADIS '12. Madeira, Portugal: July 19, 2012.
21. *Live Streaming with Utilities, Quality and Cost*. PODC '12. Madeira, Portugal: July 18, 2012.
22. *Alan Turing: The Man Who Won the Battle of Britain*. ICE-TCS Alan Turing Centenary Series. Reykjavik University, Iceland: February 17, 2012.
23. *Making Systems Scalable with Consistent Hashing*. UTmessan IT Conference. Reykjavik, Iceland: February 9, 2012.
24. *Introduction to Game Theory with Applications to Network Traffic*. Warwick University, Complexity Guest Lecture Series. Coventry, UK: September 23, 2011.
25. *But What is Cloud Computing?* SKYRR Technology Conference, Invited Talk. Reykjavik, Iceland: September 9, 2011.
26. *Ultra Scalable Messaging Systems*. Reykjavik University, Invited Talk. Reykjavik, Iceland: May 6, 2011.
27. *Ultra Scalable Messaging Systems*. Cornell University, Invited Seminar. Ithaca, NY: April 6, 2011.
28. *Ultra Scalable Messaging Systems*. University of Michigan, Invited Seminar. Ann Arbor, MI: March 31, 2011.
29. *Ultra Scalable Messaging Systems*. University of Chicago, Invited Colloquium. Chicago, IL: March 30, 2011.
30. *Ultra Scalable Messaging Systems*. Technion University, Distributed Systems Seminar. Haifa, Israel: March 17, 2011.
31. *Patchwork Multicast*. Technion University, Industrial Engineering Seminar Series. Haifa, Israel: October 26, 2010.
32. *Patchwork Multicast*. Reykjavik University, Invited Talk. Reykjavik, Iceland: December 30, 2010.
33. *Data Caching as a Cloud Service*. LADIS '10. Zürich, Switzerland: July 29, 2010.
34. *Quilt: A Patchwork of Multicast Regions*. DEBS '10. Cambridge, UK: July 14, 2010.
35. *Dr. Multicast: Rx for Data Center Communication Scalability*. EuroSys '10. Paris, France: April 16, 2010.
36. *Affinity in Distributed Systems*. Reykjavik University, ICE-TCS Seminar. Reykjavik, Iceland: September 18, 2009.
37. *Adaptively Parallelizing Distributed Range Queries*. University of Pierre Marie Curie (LIP6), Seminar. Paris, France: November 23, 2009.
38. *Group Scalability in Distributed Systems*. IRISA-INRIA, Seminar. Rennes, France. November 18, 2009.
39. *Group Scalability in Distributed Systems*. Technion University, ClubNet Seminar. Haifa, Israel: November 11, 2009.
40. *Optimizing Information Flow in the Gossip Objects Platform*. LADIS '09. Big Sky, MO: October 11, 2009.
41. *Adaptively Parallelizing Distributed Range Queries*. VLDB '09. Lyon, France: August 26, 2009.
42. *Dr. Multicast: Rx for Data Center Communication Scalability*. IBM Research, Seminar. Haifa, Israel: January 13, 2009.
43. *Dr. Multicast: Rx for Data Center Communication Scalability*. HotNets '08. Calgary, Canada: October 6, 2008.
44. *Dr. Multicast: Rx for Data Center Communication Scalability*. LADIS '08. White Plains, NY: September 17, 2008.
45. *Sliver: A Fast Distributed Slicing Algorithm*. PODC '08. Toronto, Canada: August 19, 2008.