Ýmir Vigfússon

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Research Objective

To create and improve distributed systems using analytic and sociological insights. More specifically, I craft and validate mathematical models from real-world use of distributed systems to determine the expected behavior, then improve the system or create a new one that optimizes for this expected use case.

Education

Cornell University, Ph.D. in Computer Science.   2008-2009 (Expected)

Advisor: Prof. Ken Birman.   Topic: *Affinity in Distributed Systems.*
Minor: Music Composition.

Cornell University, M.Sc. in Computer Science.   2005-2008

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

University of Iceland, B.Sc. in Mathematics with Distinction.   2002-2005

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

Awards

Fulbright Scholarship from the Icelandic Fulbright Commission.   2005-Present

Yahoo! Key Technical Challenges Research Grant.   February 2008

Teaching Experience

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

Course: *Advanced UNIX* (sophomore level). Taught shell scripting, Perl and Python.

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

Courses: Discrete Mathematics, Functional Programming Languages, Analysis of Algorithms and Graduate Analysis of Algorithms. Supervisors: Prof. Jon Kleinberg, Radu Rugina, Paul Chew and Eva Tardos, respectively.

University of Iceland, Reykjavik, Iceland.   *Teaching Assistant.*   2003-2005

Courses: Discrete Mathematics, and Data Structures and Algorithms. Supervisor: Prof. Hjalmtyr Hafsteinsson.

Work History

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

Integrated my major research project (Dr. Multicast) into the IBM WebSphere communications layer. Devised a novel optimization algorithm based on a model we created from a real-world trace of the system. Experiments indicate a significant speed-up of the modified communications layer over the production version. 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. Supervisor: Dr. Brian Cooper.

Iceland Genomics Corporation, Reykjavik, Iceland.   *Software Engineer.*   Summer 2005

Engineered a program ("CATTAGAT") to perform a fast approximate search for a primer pair in the human genome. Supervisor: Prof. Magnus M. Halldorsson.

Western Wireless (Tal Inc.), Reykjavik, Iceland.   *System Administrator.*   1999-2003

Created and maintained a large-scale low-level e-mail service along with various administration systems. Performed security counseling. Full-time employment during summers, part-time during secondary school.

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

Identified security vulnerabilities in commonly used software. Performed vulnerability research and security software development.

Patents Filed

With Adam Silberstein, Brian Frank Cooper and Rodrigo Fonseca: *Parallel Execution of Range Queries on Distributed Partitioned Database.* Yahoo! Research, 2008.

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Papers, Posters and Publications

Y. Vigfusson, K. Birman, Q. Huang, D. Nataraj. *GO: Platform Support For Gossip Applications.* Invited to the *Ninth Annual International Conference on Peer-to-Peer Computing* (P2P), September 2009.

Y. Vigfusson, A. Silberstein, B. Cooper, R. Fonseca. *Adaptively Parallelizing Distributed Range Queries.* To appear at the *International Conference on Very Large Data Bases* (VLDB), August 2009.

V. Gramoli, **Y. Vigfusson**, K. Birman, A.M. Kermarrec, R. van Renesse. *Distributed Slicing.* To appear in *IEEE Transactions on Computers, Special Issue on Autonomic Network Computing*, July 2009.

Y. Vigfusson, H. Abu-Libdeh, M. Balakrishnan, K. Birman, G. Chockler, Y. Tock. *Poster: Dr. Multicast: Harnessing IP Multicast in Data Centers.* **Best Poster Award**. *6th USENIX Symposium on Networked Systems Design and Implementation* (NSDI), Boston, MA. April 2009.

H. Abu-Libdeh, **Y. Vigfusson**, K. Birman, M. Balakrishnan. *Ajil: Distributed Rate-limiting for Multicast Networks.* Cornell University Technical Report. December, 2008.

Y. Vigfusson, H. Abu-Libdeh, M. Balakrishnan, K. Birman, Y. Tock. *Dr. Multicast:* Rx *for Datacenter Communication Scalability.* In *Proceedings of the Workshop on Hot Topics in Networks* (Hotnets), Alberta, Canada. October 2008. Also in *Large-Scale Distributed Systems and Middleware* (LADIS), White Plains, NY. September 2008.

V. Gramoli, **Y. Vigfusson**, K. Birman, A.M. Kermarrec, R. van Renesse. *Sliver: A Fast Distributed Slicing Algorithm* (short paper). In *Proceedings of Principles of Distributed Computing* (PODC), Toronto, Canada. August 2008.

B. Wong, **Y. Vigfusson**, E.G. Sirer. *Hyperspaces for Object Clustering and Approximate Matching in Peer-to-Peer Overlays.* In *Proceedings of the Workshop on Hot Topics in Operating Systems* (HotOS), San Diego, CA. May 2007.

G. Piliouras, **Y. Vigfusson**. *A Delivery Network Creation Game.* Cornell University Technical Report (TR 1813-11801), Ithaca, NY. November 2006.

M.M. Halldorsson, J.J. Jonsson, H. Thorgeirsson, H.G. Thormar, **Y. Vigfusson**. *CATTA-GAT: Implementation of a Genomic Scan of Primer Specificity.* Manuscript.

Other Activities

Music: Diploma in Classical Piano Performance. Studying Music Composition at Cornell.

Flying: Private Pilot, licensed in Europe and in the USA. Flown about 100 hours.

Dance: Ballroom and Latin from 2000-2004. Member of the Cornell DanceSport team from 2005 to 2008.