

# David Choffnes

## Curriculum Vitae

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## Research Interests

My research focuses on identifying high-impact research problems in distributed systems, using novel techniques to solve them and producing open source software artifacts that immediately deploy them at the scale of hundreds of thousands of users. Because designing successful distributed systems requires an understanding of the networks that support them, my research also encompasses topics in networking that include Internet topologies, network positioning and network neutrality.

## Education

- **Northwestern University**, Evanston, IL, USA  
M.S. in Computer Science December, 2006  
Ph.D. in Computer Science. June, 2010.  
Thesis title: Service-Level Network Event Detection from Edge Systems  
Advisor: [Fabián E. Bustamante](#)
- **Amherst College**, Amherst, MA, USA  
B.A. in Physics & French, May, 2002

## Publications in Computer Science

### Workshop and Conference Publications

(Asterisk indicates I was presenter at the meeting.)

- John Otto, Mario Sanchez, **David R. Choffnes**, Fabian E. Bustamante. ***Mostly Harmless? A Holistic Study of Internet-wide BitTorrent Traffic from End Users.*** *In submission, January 2010.*
- **David R. Choffnes**, Fabian E. Bustamante and Zihui Ge. ***Collaborative Network Event Detection from Edge Systems.*** *In submission.* (See technical report [here.](#))
- \***David R. Choffnes**, Jordi Duch, Dean Malmgren, Roger Guimera, Fabian E. Bustamante, Luis Amaral, ***Strange Bedfellows: Communities in BitTorrent,*** To appear in Proc. of IPTPS 2010, April 2010.
- **David R. Choffnes**, Mario A. Sánchez, Fabián E. Bustamante, ***Network positioning from the edge: An empirical study of the effectiveness of network positioning in P2P systems,*** To appear in Proc. of IEEE INFOCOM 2010 mini-conference, March 2010. (See extended version [here.](#))

- Kai Chen, **David R. Choffnes**, Rahul Potharaju, Yan Chen, Fabián E. Bustamante, Dan Pei, Yao Zhao. ***Where the Sidewalk Ends: Extending the Internet AS Graph Using Traceroutes From P2P Users***, In Proc. of ACM CoNEXT 2009, December 2009. [Abstract and PDF](#)
- \***David R. Choffnes** and Fabián E. Bustamante. ***On the Effectiveness of Measurement Reuse for Performance-Based Detouring***, In Proc. of IEEE INFOCOM 2009, April 2009. [Abstract and PDF](#)
- \***David R. Choffnes** and Fabián E. Bustamante. ***Taming the Torrent: A practical approach to reducing cross-ISP traffic in P2P systems***, In Proc. of ACM SIGCOMM 2008, August 2008. [Abstract and PDF](#)
- A-J Su, **David R. Choffnes**, F. Bustamante and A. Kuzmanovic. ***Relative Network Positioning via CDN Redirections***, In Proc. of International Conference on Distributed Computing Systems (ICDCS), June 2008. [Abstract and PDF](#)
- \***David R. Choffnes** and Fabián E. Bustamante. ***Exploiting Emergent Behavior for Inter-Vehicle Communication***, In Proc. of 2nd International Workshop on Hot Topics in Autonomic Computing (HotAC), June 2007. [Abstract and PDF](#)
- Ao-Jan Su, **David R. Choffnes**, Alekzandar Kuzmanovic and Fabián E. Bustamante. ***Drafting Behind Akamai (Travelocity-Based Detouring)***, In Proc. of ACM SIGCOMM 2006, September 2006. [Abstract and PDF](#)
- \***David R. Choffnes** and Fabián E. Bustamante. ***An Integrated Mobility and Traffic Model for Vehicular Wireless Networks***, In Proc. of the 2nd ACM International Workshop on Vehicular Ad Hoc Networks (VANET), September 2005. [Abstract and PDF](#)

#### Journal and Magazine Publications

- **David R. Choffnes**, Fabian E. Bustamante. ***Pitfalls of Testbed Evaluations of Internet Systems***. To appear in SIGCOMM Computer Communications Review 40, 2 (April 2010).
- **David R. Choffnes** and F. Bustamante , ***Taming the Torrent***. In USENIX ;login:, February 2010.
- A-J Su, **David R. Choffnes**, A. Kuzmanovic and F. Bustamante, ***Drafting Behind Akamai: Inferring Network Conditions Based on CDN Redirections***, In IEEE/ACM Transactions on Networking, (Feb. 2009).
- **David R. Choffnes**, M. Astley, and M. J. Ward , ***Migration policies for multi-core fair-share scheduling***. SIGOPS Operating Systems Review 42, 1 (Jan. 2008), 92-93.

#### Textbooks

- Deitel, H., Deitel, P., **Choffnes, D.**, *Operating Systems*, Third Edition, Prentice Hall, 2004. (ISBN: 0131828274) ([Link to product](#))
- Deitel, H., Deitel, P., **Choffnes, D.**, Kelsey, C., *Simply C++ : An Application-Driven Tutorial Approach*, Prentice Hall, 2005. (ISBN: 0131426605) ([Link to product](#))

## Non-refereed Publications

- **David R. Choffnes**, Fabian E. Bustamante. *Using the Crowd to Monitor the Cloud: Detecting Network Events from Edge Systems*. Tech. Report NWU-EECS-09-19, Department of EECS, Northwestern University, October 2009. [Abstract and PDF](#)
- **David R. Choffnes**, Jordi Duch, Dean Malmgren, Roger Guimera, Fabian E. Bustamante, Luis Amaral. *SwarmScreen: Privacy Through Plausible Deniability in P2P Systems*. Tech. Report NWU-EECS-09-04, Department of EECS, Northwestern University, June 2009. [Abstract and PDF](#)

## Professional Activities

- TPC member, ICCCN 2009 P2PN (Peer-to-Peer Networking Track)
- Reviewer: IEEE TPDS (Transactions on Parallel and Distributed Systems), IEEE TVT (Transactions on Vehicular Technology)

## Other Activities

- **David Choffnes**, *EdgeScope: Exposing the View of Edge Systems*, Invited Talk at 2<sup>nd</sup> AIMS Workshop, San Diego, CA, February 2010.
- **David Choffnes**, *Using the Crowd to Monitor the Cloud*, Talk at Harvard University, Cambridge, MA, November 2009.
- **David Choffnes**, *Using the Crowd to Monitor the Cloud*, Speaker for [MITACS Seminar](#), McGill University, QC, Canada, November 2009.
- **David R. Choffnes** and Fabián E. Bustamante. *The Network Early Warning System – Crowd Sourcing Network Anomaly Detection*, Poster Session, Operating Systems Design and Implementation (OSDI) 2008, San Diego, CA.
- **David Choffnes**, *Sustainable Internet Scalability through Measurement Reuse*, Invited Talk, Amherst College, MA, March 2008.
- **David R. Choffnes** and Fabián E. Bustamante. *SideStep - Scalable Detouring by Reusing CDN Measurements*, Poster Session, Symposium on Operating Systems Principles (SOSP) 2007, Stevenson, WA.

## Press

- Apr 9, 2009 – Slashdot article: “Privacy In BitTorrent By Hiding In the Crowd” on SwarmScreen. [<http://yro.slashdot.org/article.pl?sid=09/04/09/1310223>]
- Nov 25, 2008 -- Slashdot article: "News for Nerds" on NEWS. [<http://tech.slashdot.org/tech/08/11/25/1525203.shtml>]
- Nov 24, 2008 -- Chronicle of Higher Education: Researchers Create 'Neighborhood Watch' System to Detect Network Problems. [<http://chronicle.com/wiredcampus/article/3482/researchers-create-neighborhood-watch-system-to-detect-network-problems>]

- May 6, 2008 -- Ars Technica article on Ono [<http://arstechnica.com/news.ars/post/20080506-researchers-use-akamai-to-find-local-bittorrent-peers.html>].
- May 5, 2008 -- Slashdot article on Ono [<http://tech.slashdot.org/article.pl?sid=08/05/05/155236&from=rss>].
- May 2, 2008 -- New Software Allows ISPs and P2P Users to Get Along Without Getting Too Cozy [<http://www.mccormick.northwestern.edu/news/articles/365>]

## Publicly Released Code

- **SwarmScreen**  
*Plugin for the Vuze (Azureus) BitTorrent client that provides downloading privacy through plausible deniability. Downloaded thousands of times.*
- **NEWS (Network Early Warning System)**  
*Plugin for the Vuze (Azureus) BitTorrent client that efficiently and reliably finds problems in the network and raises alerts about them. As of February 25<sup>th</sup>, 2010: **41,941** users.*
- **Ono**  
*Plugin for the Azureus BitTorrent client that uses CDN-based measurements to reduce cross-ISP traffic and improve throughput. As of February 25<sup>th</sup>, 2010: **900,953** users.*
- **STRAW (STreet RAndom Waypoint)**  
*Vehicular mobility model implemented for the JiST/SWANS simulation platform. Downloaded over 1,000 times.*
- **SWANS++**  
*Sourceforge project that unifies updates and improvements to the JiST/SWANS simulation platform. Downloaded over 500 times.*
- **Cerantias**  
*Real-time visualization tool for the JiST/SWANS simulation platform. Also enables interaction with and online modification of the ongoing simulation, and can be detached/reattached dynamically for performance.*

## Recent Employment

- **AT&T Labs Research, Florham Park, NJ, Summer 2009**
  - Worked with Kobus van der Merwe on the AT&T Mobility network.
- **IBM T. J. Watson Research Lab, Hawthorne, NY, Summer 2007**
  - Worked on a practical fair-share process scheduler for the Linux kernel. The contributions included efficient, fair support for MP systems, support for legacy priority-based applications and a simulation study to prove its effectiveness.
- **Northwestern University, Evanston, IL Fall 2005 – Fall 2006**
  - Teaching Assistant for Operating Systems, Mathematical Foundations of Computer Science and Introduction to Computer Systems.
- **Deitel & Associates, Maynard, MA August 2002–July 2004**
  - Coauthor and project manager for *Simply C++ : An Application-Driven Tutorial Approach* (ISBN: 0131426605), an introductory-level C++ textbook.

- Coauthor and project manager for *Operating Systems*, Third Edition (ISBN: 0131828274). The book focuses on operating system concepts in addition to providing in-depth case studies. It is designed intended for upper-level undergraduate CS courses and intro-level graduate courses.
- Programmer, writer and editor for the first book in the “Simply...” series of books, *Simply Visual Basic .NET*. (ISBN: 0131405535)

## Honors

- Terminal Year Cabell Fellowship, Northwestern University, 2008-2009.
- Honorable Mention, NSF Graduate Research Fellowship, April 2005.
- Cabell Fellowship, Northwestern University, Sept 2004.
- *Magna cum laude*, Amherst College, May 2002.

## Cetera

- Webmaster for the Amherst Alumni Association of Chicago
- Treasurer, Northwestern Graduate Student Association
- Committee member, Graduates in Electrical Engineering and Computer Science (GEECS)
- Organizer, Graduate Research Seminar in CS and CE.
- Treasurer and 4-year rower on the Crew team, Co-president of the Amherst College Alumni Rowing Association
- Knowledgeable in Linux internals, particularly version 2.6.
- Fluent in French