

# Dave Levin

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Research Interests Networking and distributed systems, particularly: incentives for cooperation, protecting user privacy, and applying game theory and auction theory to practical, large-scale systems.

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Education **University of Maryland**, College Park, Maryland USA  
Ph.D., Computer Science, September 2010

- Dissertation: Systems-compatible Incentives
- Advisors: Bobby Bhattacharjee, Neil Spring, and Aravind Srinivasan

**University of Maryland**, College Park, Maryland USA  
B.S., Computer Science, May 2002  
B.S., Mathematics, May 2002

**University of Notre Dame**, Notre Dame, Indiana USA  
Attended August 1997 – May 1999

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Honors and Awards

- Best paper, USENIX NSDI 2009, for *TrInc: Small Trusted Hardware for Large Distributed Systems*
- Best presentation, Computer Science track of UMD Graduate Research Interaction Day, 2009
- Microsoft Live Labs fellowship, awarded 2008
- Dean's fellowship for excellence in research, Computer Science Dept., Univ. of Maryland, 2006
- Outstanding undergraduate computer science teaching assistant award, Univ. of Maryland, 2002

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Refereed Publications

- 1. Making Currency Cheap with iOwe**  
*Dave Levin*, Aaron Schulman, Katrina LaCurts, Neil Spring, Bobby Bhattacharjee  
NetEcon 2011 (Workshop on the Economics of Networks, Systems, and Computation)
- 2. Secure Sharing in Distributed Information Management Applications: Problems and Directions**  
Piotr Mardziel, Adam Bender, Michael Hicks, *Dave Levin*, Mudhakar Srivatsa, Jonathan Katz  
ACITA 2010 (Annual Conference of the International Technology Alliance)
- 3. Don't Love Thy Nearest Neighbor**  
Cristian Lumezanu, *Dave Levin*, Bo Han, Neil Spring, Bobby Bhattacharjee  
IPTPS 2010 (International Workshop on Peer-to-Peer Systems)
- 4. Stay or go? Participation in Under-Provisioned Video Streams**  
*Dave Levin*, Daniel Malter, Neil Spring, Bobby Bhattacharjee  
NetEcon 2009 (Workshop on the Economics of Networks, Systems, and Computation)
- 5. TrInc: Small Trusted Hardware for Large Distributed Systems**  
*Dave Levin*, John R. Douceur, Jacob R. Lorch, and Thomas Moscibroda  
NSDI 2009 (USENIX Symposium on Networked Systems Design and Implementation)
- 6. Symbiotic Relationships in Internet Routing Overlays**  
Cristian Lumezanu, Randy Baden, *Dave Levin*, Neil Spring, and Bobby Bhattacharjee  
NSDI 2009 (USENIX Symposium on Networked Systems Design and Implementation)

**7. BitTorrent is an Auction: Analyzing and Improving BitTorrent's Incentives**

*Dave Levin, Katrina LaCurts, Neil Spring, and Bobby Bhattacharjee.*

SIGCOMM 2008 (ACM Conference on Applications, Technologies, Architectures, and Protocols for Computer Communications)

**8. Motivating Participation in Internet Routing Overlays**

*Dave Levin, Randolph Baden, Cristian Lumezanu, Neil Spring, and Bobby Bhattacharjee*

NetEcon 2008 (Workshop on the Economics of Networks, Systems, and Computation)

**9. On the Fidelity of 802.11 Packet Traces**

*Aaron Schulman, Dave Levin and Neil Spring.*

PAM 2008 (Passive and Active Measurement Conference)

**10. Capacity of Asynchronous Random-Access Scheduling in Wireless Networks**

*Deepti Chafekar, Anil Kumar, Dave Levin, Madhav Marathe, Srinivasan Parthasarathy and Aravind Srinivasan.*

INFOCOM 2008 (IEEE Conference on Computer Communications)

**11. PeerWise Discovery and Negotiation of Faster Paths**

*Cristian Lumezanu, Dave Levin and Neil Spring.*

HotNets 2007 (Workshop on Hot Topics in Networks)

**12. Backbone Construction in Selfish Wireless Networks**

*Seungjoon Lee, Dave Levin, Vijay Gopalakrishnan and Bobby Bhattacharjee.*

SIGMETRICS 2007 (ACM Int'l. Conference on Measurement and Modeling of Computer Systems)

**13. Boycotting and Extorting Nodes in an Internetwork**

*Dave Levin, Adam Bender, Cristian Lumezanu, Neil Spring and Bobby Bhattacharjee.*

NetEcon+IBC 2007 (Workshop on the Econ. of Networked Systems / Incentive-Based Computing)

**14. Accountability as a Service**

*Adam Bender, Neil Spring, Dave Levin and Bobby Bhattacharjee.*

SRUTI 2007 (Workshop on Steps to Reducing Unwanted Traffic in the Internet)

**15. Punishment in Selfish Wireless Networks: A Game Theoretic Analysis**

*Dave Levin.*

NetEcon 2006 (Workshop on the Economics of Networked Systems)

**16. Fair File Swarming with FOX**

*Dave Levin, Rob Sherwood and Bobby Bhattacharjee.*

IPTPS 2006 (International Workshop on Peer-to-Peer Systems)

**17. ProofRite: A Paper-Augmented Word Processor**

*Kevin Conroy, Dave Levin and François Guimbretière.*

UIST 2004 Demonstration (ACM Symposium on User Interface Software and Technology)

- Invited Papers    **18. Systems-Compatible Incentives**  
*Dave Levin, Neil Spring, and Bobby Bhattacharjee*  
 GameNets 2009 (International Conference on Game Theory for Networks)
- Technical Reports **19. Incentive-Compatible Bootstrapping**  
*Dave Levin, Katrina LaCurts, Aaron Schulman, Neil Spring, and Bobby Bhattacharjee*
- 20. A Secure DHT via the Pigeonhole Principle**  
 Randy Baden, Adam Bender, *Dave Levin*, Rob Sherwood, Neil Spring and Bobby Bhattacharjee.
- 21. Paranoia: An Anonymous, Censorship-Resistant File Store**  
*Dave Levin* and Bobby Bhattacharjee.
- 22. DDoS Detection in Multi-Homed Stub Domains**  
 Chris Kommareddy, *Dave Levin*, Bobby Bhattacharjee, Richard La, Mark Shayman and Vahid Tabatabaee.
- Under Submission **23. Nurikabe: Private yet Accountable Online Advertising**  
*Dave Levin, Bobby Bhattacharjee, John R. Douceur, Jacob R. Lorch, James Mickens, and Thomas Moscibroda*
- 24. Hoodnets: Mobile Users Bonding over Auctions**  
*Dave Levin, Robert Kiefer, Kevin McGehee, Kristin Stephens, Koyel Mukherjee, Neil Spring, and Bobby Bhattacharjee*

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Professional Experience    **Hewlett Packard Labs**, Palo Alto, California USA  
*Researcher* **2010 – present**  
 I currently work in Bernardo Huberman’s Social Computing Group. My research includes designing market mechanisms to support new forms of interaction in networked systems.

**Microsoft Research**, Redmond, Washington USA  
*Researcher; Summer Intern* **2008 – 2009**  
 Worked in the Distributed Systems and Security group with John Douceur, Jacob Lorch, James Mickens, and Thomas Moscibroda on the design of secure and incentive-compatible protocols. The two summers resulted in a best paper at NSDI 2009 and a submission to NSDI 2010.

**Hewlett Packard Labs**, Palo Alto, California USA  
*Researcher; Summer Intern* **2006**  
 Worked in Bernardo Huberman’s Information Dynamics Lab. Worked closely with Kevin Lai on a source-initiated multicast protocol. Collaborated with other researchers on topics ranging from social networking to decentralized digital markets.

**Space/Ground System Solutions**, La Plata, Maryland USA  
*Software Engineer* **2002 – 2003**  
 Designed, developed, and supported application-level device drivers in C. Ported some of the code from legacy Fortran on a VAX.

**TIPS Technology**, Crofton, Maryland USA  
*Software Developer* **2001**  
 Designed, developed, and supported myriad web-based applications in Perl, MySQL, and Java.

**Motorola**, Arlington Heights, Illinois USA

*Software Engineer; Summer Intern*

**1999 – 2000**

Aided in design, coding, and testing of embedded software responsible for communication between 3G cell phones and base stations.

**U.S. Department of Defense**, Dahlgren, Virginia USA

*Systems Administrator; Summer Intern*

**1996 – 1998**

Administered a lab consisting of SGI, Sun, and Windows machines.

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Departmental  
Activities

- Co-founder of GTRG, a game theory reading group for the Computer Science Department (see <http://www.cs.umd.edu/users/dml/gtrg.html>).
- Elected member of the Computer Science Department's Education Committee, 2005 – 2006.
- President of the Executive Council, the graduate student governing body for promoting interaction among students and faculty in the computer science department, 2004 – 2005.

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Service Activities

Program committee member for: ACM SIGCOMM 2012, NetEcon 2011, DIALM-POMC 2010

Referee for the following publications: IEEE Transactions on Networking (2011), IEEE Transactions on Information Forensics and Security (2011), COMNET (2009, 2011), IEEE Communications Letters (2011), IET Information Security (2010), Computer Communication Review (2010), HotNets (2009), NetEcon (2009), ACM SIGMETRICS (2007–2009), IEEE Transactions on Computers (2009), IEEE INFOCOM (2006, 2009), IEEE ICNP (2006–2008), ICALP (2008), PHYSCOMNET (2008), SocialNets (2008), Distributed Computing Journal (2007), IEEE JSAC: Non-Cooperative Behavior in Networking (2006), ACM CCS (2006), Journal of Graph Algorithms and Applications (2006), IEEE JSAC: High-Speed Network Security (2006), Global Internet (2005)

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Teaching  
Experience

**University of Maryland**, College Park, Maryland USA

*Teaching Assistant*

**2001 – 2003**

Led a semiweekly discussion section of 10-25 computer science undergraduate students in their first or second year. Duties also included office hours and grading exams.

- CMSC 106: Introduction to C Programming, Fall 2003.
- CMSC 214: C++ Programming and Data Structures, Fall 2001, Spring 2002.

*Grader*

**2000**

Graded homework for a class consisting of computer science and mathematics undergraduate and graduate students.

- MATH 456: Introduction to Cryptology, Fall 2000.

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Invited Talks

*Systems without Cooperation*

- Stanford University Networking Seminar. July 2009
- Georgia Tech. Hosted by Nick Feamster. December 2008
- University of Wisconsin-Madison. Hosted by Suman Banerjee. December 2008

*Fair File Swarming with FOX*

- University of Delaware. Hosted by Paul Amer. September 2005

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References

Available upon request.