

MARK D. YARVIS

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## Education

Ph.D. in Computer Science, University of California, Los Angeles, 2001

Dissertation: *Conductor — Distributed Adaptation for Heterogeneous Networks*

Advisors: Gerald J. Popek and Peter Reiher

M.S. in Computer Science, University of California, Los Angeles, 1998

B.S. in Computer Science and Engineering, University of California, Los Angeles, 1991

## Research Interests

Mobile and wireless systems, sensor networks, pervasive computing, adaptive software systems

## Summary

Mark Yarvis is a seasoned technologist, with over 10 years of experience creating and executing on research agendas, developing and piloting end-to-end usage prototypes, and leading high-performance teams. He has authored *more than two dozen peer-reviewed technical publications*. Having participated in the organization of more than 20 academic conferences and workshops, he has made steady investments in his research community and field. He has significant experience with *advanced development, prototyping, and trial deployments*, including Intel's Helios-award-winning shipboard sensor network deployment in conjunction with British Petroleum. With 12 patents issued, over 35 patent applications outstanding, and contributions to both products and standards, Mark has a *demonstrated ability to create technological solutions* to real problems.

## Technology Expertise

- Mastery of C, C#, Java, JavaScript, Perl, PHP, Bash, NesC
- Experience with C++, Objective C, Scheme
- Software development frameworks: Windows Forms (.NET and .NET CF) and Apple Cocoa
- Widget frameworks: Firefox extensions, Yahoo TV Widgets
- Client-side development: JavaScript, XUL, SQLite, XML, HTML, JDOC
- Server-side development: PHP, SQLite, Web Services
- Embedded software development: TinyOS, Linux, .NET Micro Framework
- Linux kernel / driver development
- Network protocol design /development: MAC, Transport, Routing/Topology, Application layers
- TCP/IP and wireless protocols (802.11, Bluetooth, 802.15.4)
- Ad hoc / mesh routing: AODV, DSR, DSDV, multi-path, multi-radio, and hierarchical routing
- Unix/Linux systems administration, IP network administration

## Experience

*Member of Technical Staff, Trident Data Systems*

1991 – 1995

Participated in the design and management of a 3000 seat Intranet. Designed, implemented, and maintained medium-sized software projects. Developed and taught in-house technical courses. Provided consultation to the Los Angeles Sheriff's Department to develop policies and guidelines for the design and management of their computing and network facilities.

*Independent Consultant*

1995 – 2001

Provided Unix and TCP/IP-based systems administration, network management, and Internet connectivity support to small businesses.

*Teaching Assistant, Computer Science Department, University of California, Los Angeles*

1995

Led weekly recitations on systems programming. Prepared and graded laboratory assignments.

*Research Assistant, University of California, Los Angeles*

1995 – 2001

Designed and implemented the *Conductor* distributed adaptation service, which allows automatic, reliable, and secure deployment of arbitrary adaptation modules into heterogeneous networks.  
Designed and implemented a kernel-level TCP interception facility for Linux. Core member of *Rumor* project: enhanced, debugged, maintained, and evaluated a peer-to-peer file replication service.  
9 papers accepted and 1 book published.

*Senior Staff Research Scientist and Architect, Intel Corporation*

2001 – present

Conceived, funded, and led novel research program on Heterogeneous Sensor Networks

- Pioneered the concept of heterogeneous sensor networks
- Led 3-person team to developed heterogeneity technologies – routing, MAC, and energy management – for embedded systems (TinyOS), released to academic community
- Led joint investigation with researchers at Portland State University; advised PhD student
- 8 papers accepted (INFOCOM, SECON, MONET, *et al.*) and 7 patent apps filed (2 issued)

Led software architecture and development for Industrial Sensor Networking deployments

- Led architecture definition and software development of comprehensive (enterprise and embedded) software stack for industrial equipment monitoring
- Delivered software solution to shipboard condition-based-maintenance PoC; project recognized with British Petroleum “Helios Partnership Award”
- Led team of 4 R&D engineers
- 2 papers accepted (SenSys, SECON) and 6 patent apps filed (1 issued)

Executed innovative research in 802.11 wireless networking technologies

- Led home wireless testbed project; characterized connectivity and identified key factors affecting 802.11 wireless network performance in home environments
- Contributed Interworking technology to Intel’s proposal to the IEEE 802.11s Task Group
- Drove development of 802.11 direct-link technology, accepted as product “Plan Of Record”
- 5 papers accepted (INFOCOM, *et. al*) and 8 patent apps filed (all issued)

Led joint investigation on technologies for Emergency Medicine with OHSU researchers, clinicians

- Led development of end-to-end software architecture for telemedicine and mobile health monitoring, used by three teams for healthcare research prototypes
- Led development of a tablet- and wireless sensor-based telemedicine prototype for recording and transmitting a holistic record of patient context
- Led execution of telemedicine pilot in 39 simulated rescues in collaboration with leading OHSU Emergency Medicine researchers and clinicians
- Oversight of research projects in data replication, service architectures, biometric authentication, and data privacy and trust
- Award winning research: OHSU OCTRI award for *Best Interdisciplinary or Collaborative Research*, Wireless Health 2010 *Best Paper Award*
- Led team of 7 researchers
- 7 papers accepted (INFOCOM, TECS, *et. al*), and 8 patent apps filed (1 issued)

Led initial research into advanced multi-touch user interface technology

- Architected and developed base software stack for multi-touch identification
- Oversight of signal processing research into touch and gesture characterization
- Contributed to OEM design win for world’s first dual-display, 10-finger, multi-touch platform: Acer Iconia notebook
- Led team of 3 R&D engineers
- 1 patent app filed

Conceived and led novel research into pervasive and personalized entertainment experiences

- Delivered future entertainment concept prototypes, demonstrated at Intel press events, including Intel CTO keynote at the Intel Developer Forum (IDF 2009, San Francisco)
- Delivered multi-sensor presence detection technology into advanced advertizing product development; demonstrated >95% accuracy in end-user PoC deployment
- Led team of 5 R&D engineers

- 12 patent apps filed

Architect and team lead for Compute Continuum cloud services

- Conceived and led development of cloud services to enable cross-Internet authorization, discovery, and communication between applications
- Led team of 4 R&D engineers
- 3 patent apps filed

### Books and Chapters

1. Peter Reiher, Richard Guy, Kevin Eustice, Vincent Ferreria, and **Mark Yarvis**, "Co-Operative Adaptation Between End Points," In *Active Middleware Services*, Salim Hariri, Craig A. Lee, and Cauligi Raghavendra (eds.), Kluwer Academic Publishers, Boston, October 2000.
2. **Mark D. Yarvis**, Peter Reiher, and Gerald Popek, *Conductor: Distributed Adaptation for Heterogeneous Networks*, Kluwer Academic Publishers, Boston, May 2002.
3. **Mark Yarvis** and Wei Ye, "Tiered Architectures in Sensor Networks," In *Handbook of Sensor Networks: Compact Wireless and Wired Sensing Systems*, Mohammad Ilyas and Imad Mahgoub (eds.), CRC Press, July 2004, pp. 13:1-13:22.
4. W. Steven Conner, John Heidemann, Lakshman Krishnamurthy, Xi Wang, and **Mark Yarvis**, "Workplace Applications of Sensor Networks," In *Wireless Sensor Networks: A Systems Perspective*, Nirupama Bulusu and Sanjay Jha (eds.), Artech House, August 2005, pp. 289-308.
5. Janani Sriram, Minh Shin, David Kotz, Anand Rajan, Manoj Sastry, and **Mark Yarvis**, "Challenges in Data Quality Assurance in Pervasive Health Monitoring Systems," *Future of Trust In Computing*, David Gawrock, Helmut Reimer, Ahmad-Reza Sadeghi and Claire Vishik (eds.), Vieweg and Teubner, July 2009, pp. 129-142.

### Journal Articles and Special Issues

1. Jun Li, **Mark Yarvis**, and Peter Reiher, "Securing Distributed Adaptation," In *Computer Networks: Special Issue on Programmable Networks*, A.T. Campbell, David Wetherall, and Raj Yavatkar (eds.), 38(3):347-371, February 2002. (invited, extended version)
2. Lakshman Krishnamurthy, Steven Conner, **Mark Yarvis**, Jasmeet Chhabra, Carl Ellison, Chuck Brabenac, and Ernest Tsui, "Meeting the Demands of the Digital Home with High-Speed Multi-Hop Wireless Networks," In *Intel Technology Journal: Special Issue on Interoperable Home Infrastructure*, 6(4):57-68, November 2002.
3. W. Steven Conner, Jasmeet Chhabra, **Mark Yarvis**, and Lakshman Krishnamurthy, "Experimental Evaluation of Synchronization and Topology Control for In-Building Sensor Network Applications," In *Mobile Networks and Applications (MONET): Special Issue on Wireless Sensor Networks*, Parmesh Ramanathan, Ramesh Govindan, and Krishna Sivalingam (eds.), 10(4):545-562, August 2005. (invited, extended version)
4. Changwen Liu, **Mark Yarvis**, W. Steven Conner, and Xingang Guo, "Guaranteed On-Demand Discovery of Node-Disjoint Paths in Ad Hoc Networks," In *Computer Communications Journal Special Issue on Network Coverage and Routing Schemes for Wireless Sensor Networks*, Hsiao-Hwa Chen and Yang Yang (eds.), Volume 30, Issue 14-15, October 2007, pp. 2917-2930.
5. **Mark Yarvis** and Michele Zorzi (eds.), Special Issue on Energy Efficient Design in Wireless Ad Hoc and Sensor Networks, *Ad Hoc Networks Journal*, Vol. 6, Issue 8, Elsevier, November 2008.
6. Deborah Agarwal, Duc A. Tran, and **Mark Yarvis** (eds.), Special Issue on Ordered Communication in Ad hoc Networks, *International Journal of Pervasive Computing and Communications (IJGCC)*, Vol. 5, Issue 4, Emerald Group Publishing, 2009.
7. Gang Zhou, Qiang Li, Jingyuan Li, Yafeng Wu, Shan Lin, Jian Lu, Chieh-Yih Wan, **Mark D. Yarvis**, and John A. Stankovic, "Adaptive and Radio-Agnostic QoS for Body Sensor Networks," *ACM Transactions on Embedded Computing Systems (TECS)*, Volume 10, Issue 4, November 2011.
8. Rita H. Wouhaybi, **Mark D. Yarvis**, Sangita Sharma, Philip Muse, Chieh-Yih Wan, Sai Prasad, Lenitra Durham, Ritu Sahni, Robert Norton, Merlin Curry, Holly Jimison, Richard Harper, and Robert A. Lowe, "Experiences with Context Management in Emergency Medicine," *ACM Transactions on Embedded Computing Systems (TECS) Special Issue on Wireless Health Systems*, 2012. (to appear)

## Peer-Reviewed Publications

1. **Mark Yarvis**, Peter Reiher, and Gerald J. Popek, “Conductor: A Framework for Distributed Adaptation”, In *Proceedings of the Seventh Workshop on Hot Topics in Operating Systems (HotOS VII)*, Rio Rico, Arizona, March 1999, pp. 44-49.
2. **Mark Yarvis**, Peter Reiher, and Gerald J. Popek, “A Reliability Model for Distributed Adaptation,” In *Proceedings of the Third IEEE Conference on Open Architectures and Network Programming (OPENARCH 2000)*, Tel-Aviv, Israel, March 2000, pp. 88-97.
3. Peter Reiher, Richard Guy, **Mark Yarvis**, and Alexey Rudenko, “Automated Planning for Open Architectures,” short paper presented at OPENARCH 2000, Tel-Aviv, Israel, March 2000.
4. Peter Reiher, Richard Guy, Kevin Eustice, Vincent Ferreria, and **Mark Yarvis**, “Co-operative Adaptation Between End Points,” In *Proceedings of the 2<sup>nd</sup> Annual Workshop on Active Middleware Services (AMS 2000)*, Pittsburgh, Pennsylvania, August 2000.
5. Jun Li, **Mark Yarvis**, and Peter Reiher, “Securing Distributed Adaptation,” In *Proceedings of the Fourth IEEE Conference on Open Architectures and Network Programming (OPENARCH 2001)*, Anchorage, Alaska, April 2001, pp. 71-82.
6. Jun Li, Peter Reiher, Gerald Popek, **Mark Yarvis**, and Geoff Kuenning, “An Approach to Measuring Large-Scale Distributed Systems (position paper),” In *Proceedings of the IFIP 14<sup>th</sup> International Conference on Testing Communicating Systems (TestCom 2002)*, Berlin, Germany, March 2002.
7. **Mark D. Yarvis**, W. Steven Conner, Lakshman Krishnamurthy, Jasmeet Chhabra, Brent Elliott, and Alan Mainwaring, “Real-World Experiences with an Interactive Ad Hoc Sensor Network,” In *Proceedings of the International Workshop on Ad Hoc Networking (IWAHN 2002)*, Vancouver, British Columbia, Canada, August 2002, pp. 143-151. (>100 citations)
8. W. Steven Conner, Jasmeet Chhabra, **Mark Yarvis**, and Lakshman Krishnamurthy, “Experimental Evaluation of Synchronization and Topology Control for In-Building Sensor Network Applications,” In *Proceedings of the Second ACM International Workshop on Wireless Sensor Networks and Applications (WSNA 2003)*, San Diego, California, September 2003, pp. 38-49.
9. Omprakash Gnawali, **Mark Yarvis**, John Heidemann, and Ramesh Govindan, “Interaction of Retransmission, Blacklisting, and Routing Metrics for Reliability in Sensor Network Routing,” In *Proceedings of the First International Conference on Sensor and Ad Hoc Communications and Networks (SECON 2004)*, Santa Clara, California, October 2004, pp. 34-43. (acceptance rate: 19%)
10. **Mark Yarvis**, Nandakishore Kushalnagar, Harkirat Singh, Anand Rangarajan, York Liu, and Suresh Singh, “Exploiting Heterogeneity in Sensor Networks,” In *Proceedings of the IEEE International Conference on Computer Communication (INFOCOM 2005)*, Miami, Florida, March 2005, pp. 878-890. (acceptance rate: 17%, >250 citations)
11. **Mark Yarvis**, Konstantina Papagiannaki, and W. Steven Conner, “Characterization of 802.11 Wireless Networks in the Home,” In *Proceedings of the First Workshop on Wireless Network Measurements (WinMee 2005)*, Trentino, Italy, April 2005.
12. Mustafa Demirhan, Mousumi Hazra, **Mark Yarvis**, and Nandakishore Kushalnagar, “Self Configuring Transmission Channel for Wireless Mesh Networks,” In *Proceedings of ACM SIGCOMM Asia Workshop 2005*, Beijing, China, April 2005.
13. Nithya Ramanathan, **Mark Yarvis**, Jasmeet Chhabra, Nandakishore Kushalnagar, Lakshman Krishnamurthy, and Deobrah Estrin, “A Stream-Oriented Power Management Protocol for Low Duty Cycle Sensor Network Applications,” In *Proceedings of the Second IEEE Workshop on Embedded Networked Sensors (EmNetS-II)*, Sydney, Australia, May 2005, pp. 53-62.
14. Lakshman Krishnamurthy, Robert Adler, Phil Buonadonna, Jasmeet Chhabra, Mick Flanigan, Nandakishore Kushalnagar, Lama Nachman, and **Mark Yarvis**, “Design and Deployment of Industrial Sensor Networks: Experiences from a Semiconductor Plant and the North Sea,” In *Proceedings of the Third ACM Conference on Embedded Networked Sensor Systems (SenSys 2005)*, San Diego, California, November 2005, pp. 64-75. (acceptance rate: 17%, >200 citations)
15. Konstantina Papagiannaki, **Mark Yarvis**, and W. Steven Conner, “Experimental Characterization of Home Wireless Networks and Design Implications,” In *Proceedings of the Twenty-Fifth Annual IEEE Conference on Computer Communications (INFOCOM 2006)*, Barcelona, Spain, April 2006. (acceptance rate: 18%)

16. Robert P. Adler, Jonathan Huang, Raymond Kong, Philip Muse, Lama Nachman, Rahul C. Shah, Chieh-yih Wan, and **Mark Yarvis**, "Edge Processing and Enterprise Integration: Closing the Gap on Deployable Industrial Sensor Networks," In *Proceedings of the Fourth Annual IEEE Communications Society Conference on Sensor, Mesh and Ad Hoc Communications and Networks (SECON 2007)*, San Diego, California, June 2007, pp. 620-630. (*acceptance rate: 20%*)
17. Lama Nachman, Jonathan Huang, Raymond Kong, Rahul Shah, Junaith Shahabdeen, Chieh-Yih Wan, and **Mark Yarvis**, "On-Body Health Data Aggregation Using Mobile Phones," *ACM SenSys 2007 Workshop on Sensing on Everyday Mobile Phones in Support of Participatory Research*, University of New South Wales, Australia, November 2007.
18. Gang Zhou, Jian Lu, Chieh-Yih Wan, **Mark D. Yarvis**, and John A. Stankovic, "BodyQoS: Adaptive and Radio-Agnostic QoS for Body Sensor Networks," In *Proceedings of the 27<sup>th</sup> IEEE International Conference on Computer Communications (INFOCOM 2008)*, Phoenix, Arizona, April 2008. (*acceptance rate: 21%*)
19. Rita H. Wouhaybi, **Mark D. Yarvis**, Philip Muse, Chieh-Yih Wan, Sangita Sharma, Sai Prasad, Lenitra Durham, Ritu Sahni, Robert Norton, Merlin Curry, Holly Jimison, Richard Harper and Robert Lowe, "A Context-Management Framework for Telemedicine: An Emergency Medicine Case Study," *Wireless Health 2010*, San Diego, California, October 2010. (*Best Paper Award*)

### Invited Presentations

1. **Mark Yarvis**, "Challenges in Distributed Adaptation," Colloquium Lecture, Computer Science Department, Harvey Mudd College, Claremont, California, March 2, 2000.
2. **Mark Yarvis**, "Ad Hoc LANs and Sensor Networks: Prime Time, Half Time, or Game Over?" Panel presentation, First IEEE International Conference on Sensor and Ad Hoc Communications and Networks (SECON 2004), Santa Clara, California, October 4, 2004.
3. Ralph Kling, Lama Nachman, and **Mark Yarvis**, "Advanced Platforms for High Performance Sensor Networks," Intel Developer Forum (IDF), San Francisco, California, August 23, 2005.
4. **Mark Yarvis**, "'Killer Apps' for Sensor Networks: Tales from the North Sea and Elsewhere," Colloquium Lecture, Computer Science Department, Portland State University, Portland, Oregon, January 23, 2006.
5. Lowe R.A., Curry M., Harper R., Hatt W., Jimison H., Norton R., Sahni R., Durham L., Hansen T., Muse P., Prasad S., Sharma S., Smiley M., Stroebel T., Wan C.-Y., Wouhaybi R., **Yarvis M.**, "Emergency Medical Services Monitoring Project," Oregon Clinical and Translational Research Institute (OCTRI) Scientific Forum, Portland, OR, September 2009. *Awarded: "Best Interdisciplinary or Collaborative Research"*
6. Norton R.L., Jimison H., Sahni R., Harper R., **Yarvis M.D.**, Hatt W., Lowe R.A., "The Development of New Technology for Paramedics and Medical Control Physicians using Qualitative Assessment," The 13<sup>th</sup> Annual SAEM Western Regional Research Forum, Sonoma, California, March 21, 2010.

### Standards

1. Technical contributor to proposal: 802.11s Working Group, "802.11 TGs Simple Efficient Extensible Mesh (SEE-Mesh) Proposal," doc.: IEEE 802.11-05/0562r0, June 2005.
2. Technical contributor to draft: IEEE P802.11s/D0.01, "Draft Amendment to Standard for Information Technology – Telecommunications and Information Exchange Between Systems – LAN/MAN Specific Requirements – Part 11: Wireless Medium Access Control (MAC) and Physical Layer (PHY) Specifications: Amendment: ESS Mesh Networking," March 2006.

### Issued Patents

1. U.S. Patent No. 7,395,064: Mustafa Demirhan, Mousumi Hazra, Nandakishore Kushalnagar, and **Mark Yarvis**, "Systems and Methods of Distributed Self-Configuration for Wireless Networks," Issued July 1, 2008, assigned to Intel Corp. (*wireless*)
2. U.S. Patent No. 7,400,248: **Mark Yarvis**, "Sensor Devices with RFID Communications," Issued July 15, 2008, assigned to Intel Corp. (*RFID, sensor networks*)

3. U.S. Patent No. 7,471,633: **Mark Yarvis**, W. Steven Conner, and Anand Rangarajan, “Multichannel, Mesh Router and Methods for Path Selection in a Multichannel Mesh Network,” Issued December 30, 2008, assigned to Intel Corp. (*wireless, mesh*)
4. U.S. Patent No. 7,471,668: Xiangping Qin, Mousumi Hazra, Mustafa Demirhan, and **Mark Yarvis**, “Method and Apparatus for Implementing All-to-All Communication in a Wireless Mesh Network,” Issued December 30, 2008, assigned to Intel Corp. (*wireless, mesh*)
5. U.S. Patent No. 7,570,628: Anand Rangarajan, W. Steven Conner, and **Mark Yarvis**, “Methods and Apparatus for Providing a Dynamic On-Demand Routing Protocol,” Issued October 4, 2009, assigned to Intel Corp. (*wireless, mesh*)
6. U.S. Patent No. 7,596,152: **Mark Yarvis**, Jasmeet Chhabra, and Nandakishore Kushalnagar, “Apparatus, System and Method Capable of Low Duty Cycle Hierarchical Ad Hoc Networks,” Issued September 29, 2009, assigned to Intel Corp. (*HSN*)
7. U.S. Patent No. 7,626,967: **Mark Yarvis**, W. Steven Conner, Anand Rangarajan, and Harkirat Singh, “Methods and Apparatus for Providing a Transparent Bridge Associated with a Wireless Mesh Network,” Issued December 1, 2009, assigned to Intel Corp. (*wireless, mesh*)
8. U.S. Patent No. 7,664,037: W. Steven Conner, **Mark Yarvis**, and Anand Rangarajan, “Multichannel Mesh Network, Multichannel Mesh Router and Methods for Routing Using Bottleneck Channel Identifiers,” Issued February 16, 2010, assigned to Intel Corp. (*wireless, mesh*)
9. U.S. Patent No. 7,697,459: W. Steven Conner, **Mark Yarvis**, Anand Rangarajan, and Harkirat Singh, “Methods and Apparatus for Identifying a Distance-Vector Route Associated with a Wireless Mesh Network,” Issued April 13, 2010, assigned to Intel Corp. (*wireless, mesh*)
10. U.S. Patent No. 7,907,732: **Mark Yarvis**, “Radio Frequency Identification Tag Lock and Key,” Issued March 15, 2011, assigned to Intel Corp. (*RFID, security and privacy*)
11. U.S. Patent No. 7,930,379: **Mark Yarvis**, Rahul C. Shah, Chieh-Yih Wan, and Yong Wang, “Interface for a Delay-Tolerant Network,” Issued April 19, 2011, assigned to Intel Corp. (*DTN*)
12. U.S. Patent No. 8,078,873: Rahul C. Shah and **Mark D. Yarvis**, “Two-Way Authentication Between Two Communication Endpoints Using a One-Way Out-of-Band (OOB) Channel,” Issued December 13, 2011, assigned to Intel Corp. (*security and privacy*)

### Patent Applications

1. **Mark Yarvis**, “Mesh Networking with RFID Communications,” filed November 2004, pub. app. 20060109084, int’l. app. PCT/US2005/041390, assigned to Intel Corp. (*RFID, mesh*)
2. Nandakishore Kushalnagar, Jasmeet Chhabra, and **Mark Yarvis**, “Apparatus, System and Method Capable of Node Adaptive Sleep Scheduling in Wireless Ad Hoc Networks,” filed February 2005, pub. app. 20060209715, assigned to Intel Corp. (*sensor networks*)
3. Jasmeet Chhabra, Nandakishore Kushalnagar, Lama Nachman, and **Mark Yarvis**, “Mechanism for Transferring Data Between Network Nodes,” filed March 2005, pub. app. 20060242316, assigned to Intel Corp. (*sensor networks, transport*)
4. **Mark Yarvis**, Sumeet Sandhu, and W. Steven Conner, “Methods and Apparatus for Providing an Integrated Multi-Hop Routing and Cooperative Diversity System,” patent pending, filed August 2005, pub. app. 20070041345, int’l. app. PCT/US2006/030522, assigned to Intel Corp. (*cooperative diversity, mesh*)
5. Mousumi Hazra, W. Steven Conner, and **Mark Yarvis**, “Method and System Effecting Communications in a Wireless Communication Network,” patent pending, filed August 2005, pub. app. 20070041351, assigned to Intel Corp. (*wireless*)
6. Sumeet Sandhu, **Mark Yarvis**, Xintian Eddie Lin, and Prasanna Mulgaonka, “Apparatus, System and Method Capable of Cooperating in a Distributed Communication Wireless Network,” filed September 2005, pub. app. 20070053338, assigned to Intel Corp. (*cooperative diversity*)
7. Nandakishore Kushalnagar, Jasmeet Chhabra, and **Mark Yarvis**, “Methodology for Scheduling Data Transfers from Nodes Using Path Information,” patent pending, filed March 2006, pub. app. 20070233835, assigned to Intel Corp. (*sensor network*)

8. Rahul Shah, Nandakishore Kushalnagar, and **Mark Yarvis**, “Reduced Power Network Association in a Wireless Sensor Network,” filed August 2006, pub. app. 20080049700, assigned to Intel Corp. (*sensor network*)
9. **Mark Yarvis**, Sumeet Sandhu, and W. Steven Conner, “Device Interfaces to Integrate Cooperative Diversity and Mesh Networking,” patent pending, filed September 2006, pub. app. 20080080440, assigned to Intel Corp. (*cooperative diversity, mesh*)
10. Chieh-Yih Wan, **Mark Yarvis**, and Jens Mache, “A Lightweight Key Distribution and Management Method for Sensor Networks,” patent pending, filed May 2007, pub. app. 20120008787, assigned to Intel Corp. (*sensor network, security*)
11. Rahul Shah and **Mark Yarvis**, “System and Method for Physiological Data Authentication and Bundling with Delayed Binding of Individual Identification,” filed September 2007, pub. app. 20090070266, assigned to Intel Corp. (*security, health*)
12. Rahul Shah and **Mark Yarvis**, “Secure Association Between Devices,” patent pending, filed December 2007, pub. app. 20090167486, assigned to Intel Corp. (*security and privacy*)
13. Rahul Shah and **Mark Yarvis**, “Secure Association Between Devices,” patent pending, filed December 2007, pub. app. 20090167487, assigned to Intel Corp. (*security and privacy*)
14. Chieh-Yih Wan, Manoj Sastry, **Mark Yarvis**, and Rahul Shah, “Techniques for Routing Privacy Sensitive Information to an Output Device,” patent pending, filed June 2008, pub. app. 20090328136, assigned to Intel Corp. (*security and privacy, health*)
15. David Graumann and **Mark Yarvis**, “Method and Apparatus for Scanning a Textile,” patent pending, filed September 2008, pub. app. 20100071482, assigned to Intel Corp. (*smart fabrics*)
16. **Mark D. Yarvis**, Philip Muse, and Lenitra M. Durham, “Multiple Protocol Data Transport,” patent pending, filed March 2009, pub. app. 20100251052, assigned to Intel Corp. (*transport, telemedicine*)
17. Bob Low, Ritu Sahni, Bob Norton, Richard Harper, Rita H. Wouhaybi, **Mark D. Yarvis**, Philip Muse, Chieh-Yih Wan, Sangita Sharma, Sai Prasad, Lenitra Durham, “Context Management Framework for Telemedicine,” patent pending, PCT/US2011/029077, filed March 2010, assigned to Oregon Health & Science University and Intel Corp. (*telemedicine*)
18. **Mark D. Yarvis**, Matthew D. Wood, “Techniques for Monetizing Anonymized Context,” patent pending, filed April 2010, pub. app. 20110246273, assigned to Intel Corp. (*privacy and security, context*)
19. **Mark Yarvis**, David Gruamann, Steve Bateman, “Device with Capacitive Touchscreen Panel and Method for Power Management,” patent pending, filed April 2010, pub. app. 20110242043, assigned to Intel Corp. (*multitouch*)
20. Rita Wouhaybi, **Mark Yarvis**, “Methods and Systems for Relationship Characterization and Utilization from a User’s Social Networks,” patent pending, filed April 2010, pub. app. 20110258203, assigned to Intel Corp. (*recommendation, social networks*)
21. **Mark D. Yarvis**, Sharad K. Garg, Rita H. Wouhaybi, and Chieh-Yih Wan, “Techniques for Customization,” patent pending, filed June 2010, pub. app. 20110321073, assigned to Intel Corp. (*recommendation*)
22. **Mark D. Yarvis** and Sharad K. Garg, “System and Method for Privacy-Preserving Advertisement Selection,” patent pending, filed June 2010, pub. app. 20120011538, assigned to Intel Corp. (*privacy and security, context*)
23. Shashi K. Jain, Prashant Gandhi, James P. Melican, Rita H. Wouhaybi, **Mark D. Yarvis**, and Gunner Danneels, “Remote Control of Television Displays,” patent pending, filed September 2010, assigned to Intel Corp. (*usability*)
24. **Mark D. Yarvis**, Kimra McPherson, “Viewership-Based Services,” patent pending, filed September 2010, assigned to Intel Corp. (*recommendation, privacy and security*)
25. Sharad K. Garg and **Mark D. Yarvis**, “Incentivizing Advertisement Viewing and Validating Associated Purchase,” patent pending, filed September 2010, assigned to Intel Corp. (*recommendation*)
26. Chieh-Yih Wan, **Mark D. Yarvis**, Sharad K. Garg, Marcelino Ford-Livene, “Validation of TV Viewership Utilizing Methods, Systems and Computer Control Logic,” patent pending, filed September 2010, assigned to Intel Corp. (*context*)

27. Shashi K. Jain, Prashant Gandhi, James P. Melican, Rita H. Wouhaybi, **Mark D. Yarvis**, and Gunner Danneels, "Remote Control of Television Displays," patent pending, filed December 2010, assigned to Intel Corp. (*distributed systems*)
28. **Mark D. Yarvis** and Sharad K. Garg, "System and Method for Viewership Validation Based on Cross-Device Contextual Inputs," patent pending, filed April 2010, assigned to Intel Corp. (*context*)
29. **Mark Yarvis**, Matt Wood, Bernie Keany, David Sandage, Tom Stroebel, Philip Muse, "Techniques for Offering Context to Service Providers Utilizing Incentives," patent pending, provisional filed December 2009, filed April 2011, pub. app. 20110247029, assigned to Intel Corp. (*privacy and security, context*)
- 29a. **Mark Yarvis**, Matt Wood, Bernie Keany, David Sandage, Tom Stroebel, Philip Muse, "Approval Service Based Techniques for Offering Context to Service Providers Utilizing Incentives," patent pending, divisional filed April 2011, pub. app. 20110246283, assigned to Intel Corp. (*privacy and security, context*)
- 29b. **Mark Yarvis**, Matt Wood, Bernie Keany, David Sandage, Tom Stroebel, Philip Muse, "Incentives Based Techniques for Offering Context to Service Providers Utilizing Synchronizing Profile Stores," patent pending, divisional filed April 2011, pub. app. 20110247030, assigned to Intel Corp. (*privacy and security, context*)
- 29c. **Mark Yarvis**, Matt Wood, Bernie Keany, David Sandage, Tom Stroebel, Philip Muse, "Techniques for Offering Context to Service Providers Utilizing an Approval Service and Incentives Utilizing Online Secure Profile Storage," patent pending, divisional filed April 2011, pub. app. 20110246213, assigned to Intel Corp. (*privacy and security, context*)
30. **Mark Yarvis**, Rita Wouhaybi, Phil Muse, Lenitra Durham, Sai Prasad, Sangita Sharma, Chieh-Yih Wan, "Context Techniques to Capture Context and Location Information and Utilize Heuristics to Turn Location Tracked Over Time and Context Information Into Semantic Location Information," patent pending, provisional filed December 2009, filed April 2011, pub. app. 20110246469, assigned to Intel Corp. (*recommendation*)
- 30a. **Mark Yarvis**, Rita Wouhaybi, Phil Muse, Lenitra Durham, Sai Prasad, Sangita Sharma, Chieh-Yih Wan, "Techniques To Determine When An Internet User Is In-Market For A Specific Product And Determining General Shopping Preferences And Habits Of Internet Users," patent pending, divisional filed April 2011, pub. app. 20110246300, assigned to Intel Corp. (*recommendation*)
- 30b. **Mark Yarvis**, Rita Wouhaybi, Phil Muse, Lenitra Durham, Sai Prasad, Sangita Sharma, Chieh-Yih Wan, "Techniques to Identify In-Market Purchasing Interests," patent pending, divisional filed April 2011, pub. app. 20110246214, assigned to Intel Corp. (*recommendation*)
31. **Mark Yarvis**, Rita Wouhaybi, Phil Muse, Lenitra Durham, Sai Prasad, Sangita Sharma, Chieh-Yih Wan, Giuseppe Raffa, "Methods, Apparatus and Systems Using Probabilistic Techniques in Trending and Profiling," patent pending, provisional filed December 2009, filed April 2011, pub. app. 20110264613, assigned to Intel Corp. (*recommendation*)
- 31a. **Mark Yarvis**, Rita Wouhaybi, Phil Muse, Lenitra Durham, Sai Prasad, Sangita Sharma, Chieh-Yih Wan, Giuseppe Raffa, "Systems, Apparatus and Methods Capable of Delivering Purchase Recommendations Based on an Interactive Mobile Shopping Applications," patent pending, divisional filed April 2011, pub. app. 20110264553, assigned to Intel Corp. (*recommendation*)
- 31b. **Mark Yarvis**, Rita Wouhaybi, Phil Muse, Lenitra Durham, Sai Prasad, Sangita Sharma, Chieh-Yih Wan, Giuseppe Raffa, "Goals Based Route Optimization," patent pending, divisional filed April 2011, pub. app. 20110251788, assigned to Intel Corp. (*recommendation*)
- 31c. **Mark Yarvis**, Rita Wouhaybi, Phil Muse, Lenitra Durham, Sai Prasad, Sangita Sharma, Chieh-Yih Wan, Giuseppe Raffa, "Recommendation-Guided Internet Purchases Utilizing Context Derived From A Constellation Of Devices," patent pending, divisional filed April 2011, pub. app. 20110251918, assigned to Intel Corp. (*recommendation*)
- 31d. **Mark Yarvis**, Rita Wouhaybi, Phil Muse, Lenitra Durham, Sai Prasad, Sangita Sharma, Chieh-Yih Wan, Giuseppe Raffa, "Techniques for Template-Based Predictions and Recommendations," patent pending, divisional filed April 2011, pub. app. 20110251990, assigned to Intel Corp. (*recommendation*)

32. Peter Adamson, **Mark Yarvis**, David Graumann, Sangita Sharma, “Techniques for Recognizing Movement of One or More Touches Across a Location on a Keyboard Grid on a Touch Panel Interface,” patent pending, filed June 2011, pub. app. 20110254772, assigned to Intel Corp. (*multitouch*)
- 32a. Peter Adamson, **Mark Yarvis**, David Graumann, Sangita Sharma, “Techniques for Recognizing Temporal Tapping Patterns Input to a Touch Panel Interface,” patent pending, divisional filed June 2011, pub. app. 20110254796, assigned to Intel Corp. (*multitouch*)
- 32b. Peter Adamson, **Mark Yarvis**, David Graumann, Sangita Sharma, “Techniques for Recognizing Multi-Shape, Multi-Touch Gestures Including Finger and Non-Finger Touches Input to a Touch Panel Interface,” patent pending, divisional filed June 2011, pub. app. 20110254797, assigned to Intel Corp. (*multitouch*)
- 32c. Peter Adamson, **Mark Yarvis**, David Graumann, Sangita Sharma, “Techniques for Recognizing a Series of Touches with Varying Intensity or Angle of Descending on a Touch Panel Interface,” patent pending, divisional filed June 2011, pub. app. 20110254798, assigned to Intel Corp. (*multitouch*)
33. Rita H. Wouhaybi, **Mark D. Yarvis**, Sharad K. Garg, “System, method and computer program product for human presence detection based on audio,” patent pending, filed August 2011, assigned to Intel Corp. (*context*)
34. Arvind Kumar, **Mark D. Yarvis**, Christopher J. Lord, “Mechanism for Facilitating Context-Aware Model-Based Image Composition and Rendering at Computing Devices,” patent pending, filed September 2011, assigned to Intel Corp. (*multi-media*)
35. Rita H. Wouhaybi, Philip Muse, **Mark D. Yarvis**, Sharad Garg, James P. Melican, “Personalized Passive Content Delivery,” patent pending, filed December 2011, PCT/US2011/063986, assigned to Intel Corp. (*recommendation*)
36. Mark Yarvis, “Location-Based Application Recommendation,” patent pending, filed January 2012, assigned to Intel Corp. (*recommendation*)

### Open Source Contributions

1. *BOL Authentication Library*, **Mark Yarvis**, <http://lever.cs.ucla.edu/yarvis/Projects/index.html>
2. *IPCept TCP Connection Interception Linux Kernel Module*, **Mark Yarvis**, <http://lever.cs.ucla.edu/yarvis/Conductor/>
3. *Conductor Adaptive Agent Framework*, **Mark Yarvis**, Jun Li, <http://lever.cs.ucla.edu/yarvis/Conductor/>
4. *Ad Hoc Routing Stack for Heterogeneous Sensor Networks*, **Mark Yarvis**, Nandakishore Kushalnagar, York Liu, Anand Rangarajan, W. Steven Conner, Lakshman Krishnamurthy, Wei Hong, <http://tinyos.cvs.sourceforge.net/viewvc/tinyos/tinyos-1.x/contrib/hsn/>
5. *CRAWDAD Data Set: Intel Home*, Konstantina Papagiannaki, **Mark Yarvis**, W. Steven Conner, April 16, 2006, <http://crawdada.cs.dartmouth.edu/meta.php?name=intel/home>

### Professional Service

*Exhibits Co-Chair* (with A. Ledeczi), Second ACM Conference on Embedded Networked Sensor Systems (SenSys 2004)

*Technical Program Committee Co-Chair* (with M. Zorzi), Third Annual IEEE Communications Society Conference on Sensor Communications and Networks (SECON 2006)

*Member*, Intel Research Council, Communications Committee, Logical Layer Subcommittee, Q4'06-Q1'09

*Editorial Board Member*, Ad Hoc Networks Journal, Elsevier, Q4'06-Q2'08

*Technical Program Committee Co-Chair* (with M. Sarrafzadeh), Fourth International Conference on Body Area Networks (BodyNets 2009), March 2009

*Technical Program Committee Member*

- First Annual IEEE Communications Society Conference on Sensor Communications and Networks (SECON 2004)
- First IEEE Workshop on Embedded Networked Sensors (EmNetS-I, 2004)
- First International Workshop on Heterogeneous Wireless Sensor Networks (HWISE 2005)

- First International Workshop on Wireless Traffic Measurements and Modeling (WiTMeMo 2005)
- Second Annual IEEE Communications Society Conference on Sensor and Ad Hoc Communications and Networks (SECON 2005)
- Third IEEE Workshop on Embedded Networked Sensors (EmNets 2006)
- Second International Workshop on Wireless Traffic Measurements and Modeling (WiTMeMo 2006)
- IEEE/ACM International Conference on Information Processing in Sensor Networks, track on Sensor Platforms, Tools, and Design Methods (IPSN/SPOTS 2007)
- International Workshop on Wireless Network Measurement (WiNMee/WiTMeMo 2007)
- International Conference on Distributed Computing Systems (ICDCS 2007)
- Fourth Annual IEEE Communications Society Conference on Sensor, Mesh, and Ad Hoc Communications and Networks (SECON 2007)
- Eighth ACM International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc 2007)
- The 27<sup>th</sup> Annual Conference of the IEEE Communications Society (INFOCOM 2008)
- Fifth Annual IEEE Communications Society Conference on Sensor, Mesh, and Ad Hoc Communications and Networks (SECON 2008)
- Fifth Workshop on Embedded Networked Sensors (HotEmNets 2008)
- First International Workshop on Social Aspects of Ubiquitous Computing Environments (SAUCE 2008)
- The 28<sup>th</sup> Annual Conference of the IEEE Communications Society (INFOCOM 2009)
- Second International Workshop on Social Aspects of Ubiquitous Computing Environments (SAUCE 2009)
- The 29<sup>th</sup> Annual Conference of the IEEE Communications Society (INFOCOM 2010)
- Wireless-Life Sciences Alliance (WLSA) Wireless Health 2010
- The 30<sup>th</sup> Annual Conference of the IEEE Communications Society (INFOCOM 2011)
- Wireless-Life Sciences Alliance (WLSA) Wireless Health 2011
- The 21<sup>st</sup> Annual Conference of the IEEE Communications Society (INFOCOM 2012)

*Member, ACM*

*Member, IEEE*

## **Students Advised**

*Adjunct Dissertation Committee Member, Harkirat Singh, Portland State University, Fall 2005*

## **Honors**

Dean's Honors List, UCLA School of Engineering — 1988/1989

Dean's Fellowship, UCLA School of Engineering — Winter 2000, Spring 2001

Malcolm R. Stacey Memorial Fellowship (declined) — April 2001

Intel Corporate Technology Group (CTG), Communications Technology Lab (CTL), Division Recognition Award (DRA) — Q2'04

Intel Corporate Technology Group (CTG), Division Recognition Award (DRA) — Q4'04

Intel Corporate Technology Group (CTG), Systems Technology Lab (STL), Team Award — Q1'07

Intel Corporate Technology Group (CTG), Division Recognition Award (DRA) — Q3'07

Intel Labs, Division Recognition Award (DRA) — Q2'09 (x2)

Intel Labs, Future Technologies Research, Division Recognition Award (DRA) – Q1'10

## **Community Service**

*Secretary and Member, Board of Directors, Bauer Crest Estates Homeowners Association, May 2011 - present*

## **Miscellaneous**

*EBI/SBI, completed 1992, lapsed 1997*

*Certificate of Home Horticulture*, Oregon State University Extension Service, December 2010

Geocaches maintained:

- GC2895J, "On Top of Mine," Portland, OR
- GC2TXP1, "High Tech Trinket Trader," Portland, OR

US Citizen

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