MARK D. YARVIS

Portland, OR

(503) 970-2604 yarvis@acm.org

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

Internet of Things, edge manageability, security, distributed systems, pervasive computing

Summary

Mark Yarvis currently works as a Principal Engineer at Intel. He is a seasoned technologist, with over 20 years of experience creating and executing on research agendas, developing and piloting end-to-end usage prototypes, and leading high-performance teams. He led teams to deliver manageability solutions for the edge in support of Intel Edge Compute for Industrial and Edge Insights for Industrial products and to deliver scalable cloud services to support Intel Smart Connect and Intel Connect Center products. He has authored *more than two dozen peer-reviewed technical publications*. Having participated in the organization of more than 25 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 57 patents issued and contributions to both products and standards, Mark has a *demonstrated ability to create technological solutions* for real problems.

Technology Expertise

- Mastery of Golang, C, C#, Java, Bash
- Experience with C++, Objective C, PHP, Perl, Javascript
- Software development frameworks: Windows Forms (.NET and .NET CF)
- Cloud: AWS Architecture
- Client-side development: JavaScript, SQLite
- Server-side development: Goalng, PHP, SQLite, Web Services, Node.js
- 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

Principal Engineer, Intel Corporation *2001 – present*

Architect, Network and Edge Group (NEX), Office of the CTO *(2022-present)*

- Led architecture for key technologies for edge manageability, lifecycle management, onboarding, and MLops, as ingredient to Intel Edge Controls for Industrial (ECI) and Intel Edge Insights for Industrial (EII) products
- Led architecture and development of novel autonomous, resilient, and policy-driven edge manageability technology based on distributed consensus
- Led architecture of deterministic manageability extensions to Kubernetes and Ansible, as key ingredient to Intel Edge Controls for Industrial (ECI) product

- Co-author of the Open Process Automation Forum's (O-PAF) Open Process Automation Specification (O-PAS) on Orchestration

Architect and engineering manager for IOT Edge Compute manageability *(2018-2022)*

- Led architecture and team to develop edge orchestration technologies as ingredient to Intel Edge Controls for Industrial (ECI) and Intel Edge Insights for Industrial (EII) products
- Led extension of cloud technologies (e.g., Kubernetes, Docker) to expose features required for edge deployments, Intel Differentiation, and Industrial customer requirements
- Led team of 12 engineers to deliver product-quality solutions

Architect and engineering manager for Smart Spaces project *(2014-2017)*

- Conceived and led development of smart spaces project combining new form factor devices with video analytics to provide a personal assistant experience in home and office concepts
- Led team to develop analytics engine licensed to 3rd parties to enhance conference room videoconference experience
- Led team of 5 R&D engineers

Architect and engineering manager for Compute Continuum cloud services *(2011-2013)*

- Conceived and led development of cloud services to enable the Personal Cloud, supporting cross-Internet usage between devices.
- Led team to deliver, deploy, and operate (in AWS) authentication, authorization and discovery services for Intel Connect Center 2.x products.
- Led team to deliver, deploy, and operate (in AWS) Remote Wake service for Intel Smart Connect 4.0 product. Owned end-to-end protocols, architecture, and security.
- Led team of 6 R&D engineers

Conceived and led research into pervasive and personalized entertainment experiences *(2009-2010)*

- 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

Led initial research into advanced multi-touch user interface technology *(2008)*

- 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

Co-led joint project on Emergency Medicine and Telemedicine with OHSU *(2007-2008)*

- 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*)

Led software architecture, development for Industrial Sensor Networking deployments *(2004-2006)*

- 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)

Executed innovative research in 802.11 wireless networking technologies *(2004)*

- 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*)

Conceived, funded, and led novel research program on Heterogeneous Sensor Networks *(2001-2003)*

- 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.*)

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.

Teaching Assistant, Computer Science Department, University of California, Los Angeles *1995*

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

Independent Consultant *1995 – 2001*

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

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.

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, Minho 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 (IJPCC)*, 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 Section on Wireless Health Systems, On-Chip and Off-Chip Network Architectures*, Vol. 12, No. 4, June 2013.

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 2nd 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 14th 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. *(>200 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%, >100 citations)*
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%, >700 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. *(>100 citations)*
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%, >500 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%, >100 citations)*
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 27th IEEE International Conference on Computer Communications (INFOCOM 2008)*, Phoenix, Arizona, April 2008. *(acceptance rate: 21%, >150 citations)*
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 13th Annual SAEM Western Regional Research Forum, Sonoma, California, March 21, 2010.
7. Robert L. Norton, Holly Jimison, Mark D. Yarvis, Ritu Sahni, Lenitra Durham, William J. Hatt, Richard Harper, Merlin Curry, Robert A. Lowe, "The Development of New Technology for Paramedics and Medical Control Physicians Using Qualitative Assessment," National Association of EMS Physicians 2014 Annual Meeting, Tuscon, Arizona, Janurary 2014.

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 August 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. *(sensor networks)*
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)*
13. U.S. Patent No. 8,186,231: David Graumann and **Mark Yarvis**, "Method and Apparatus for Scanning a Textile," Issued May 29, 2012, assigned to Intel Corp. *(smart fabrics)*
14. U.S. Patent No. 8,254,581: Chieh-Yih Wan, **Mark Yarvis**, and Jens Mache, "A Lightweight Key Distribution and Management Method for Sensor Networks," Issued August 28, 2012, assigned to Intel Corp. *(sensor network, security)*
15. U.S. Patent No. 8,285,994: Rahul C. Shah and **Mark D. Yarvis**, "Two-Way Authentication Between Two Communication Endpoints Using a One-Way Out-of-Band (OOB) Channel *(continuation)*," Issued October 9, 2012, assigned to Intel Corp. *(security and privacy)*
16. U.S. Patent No. 8,429,474: **Mark D. Yarvis**, Philip Muse, and Lenitra M. Durham, "Multiple Protocol Data Transport," Issued April 23, 2013, assigned to Intel Corp. *(transport, telemedicine)*
17. U.S. Patent No. 8,429,685: **Mark D. Yarvis** and Sharad K. Garg, "System and Method for Privacy-Preserving Advertisement Selection," Issued April 23, 2013, assigned to Intel Corp. *(privacy and security, context)*
18. U.S. Patent No. 8,537,129: 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," Issued September 17, 2013, assigned to Intel Corp. *(multitouch)*
19. U.S. Patent No. 8,570,294: Peter Adamson, **Mark Yarvis**, David Graumann, Sangita Sharma, "Techniques for Recognizing Temporal Tapping Patterns Input to a Touch Panel Interface," Issued October 29, 2013, assigned to Intel Corp. *(multitouch)*
20. U.S. Patent No. 8,599157: 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," Issued December 3, 2013, assigned to Intel Corp. *(multitouch)*
21. U.S. Patent No. 8,611,275: **Mark D. Yarvis**, Sumeet Sandhu, Steven W. Conner, "Methods and Apparatus for Providing an Integrated Multi-Hop Routing and Cooperative Diversity System," Issued December 17, 2013, assigned to Intel Corp. *(cooperative diversity, mesh)*
22. U.S. Patent No. 8,643,615: 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," Issued February 4, 2014, assigned to Intel Corp. *(multitouch)*
23. U.S. Patent No. 8,745,392: Rahul C. Shah and **Mark D. Yarvis**, "Two-Way Authentication Between Two Communication Endpoints Using a One-Way Out-of-Band (OOB) Channel *(continuation)*," Issued June 3, 2014, assigned to Intel Corp. *(security and privacy)*
24. U.S. Patent No. 8,972,713: John Vicente, Hong Li, **Mark Yarvis**, Jim Blakley, "Cloud Transformable Device," Issued March 3, 2015, assigned to Intel Corp. *(mobile devices)*
25. U.S. Patent No. 9,032,428: Chieh-Yih Wan, **Mark Yarvis**, Sharad Garg, and Marcelino Ford-Livene, "Validation of TV Viewership Utilizing Methods, Systems and Computer Control Logic," Issued May 12, 2015, assigned to Intel Corp. *(contextual advertising)*
26. U.S. Patent No. 9,130,939: John Vicente, Hong Li, **Mark Yarvis**, and James Blakley, "Ad Hoc Decentralized Cloud Infrastructure," Issued September 8, 2015, assigned to Intel Corp. *(cloud computing)*
27. U.S. Patent No. 9,202,230: **Mark D. Yarvis** and Matthew D. Wood, "Techniques for Monetizing Anonymized Context," Issued December 1, 2015, assigned to Intel Corp. *(context, privacy)*
28. U.S. Patent No. 9,264,499: Hong Li, John B. Vicente, **Mark D. Yarvis**, James R. Blakley, "Cloud Data Storage Location Monitoring," Issued February 16, 2016, assigned to Intel Corp. *(cloud)*
29. U.S. Patent No. 9,332,381: **Mark D Yarvis**, "Location-Based Application Recommendation," Issued May 3, 2016, assigned to Intel Corp. *(context, recommendation)*
30. U.S. Patent No. 9,430,640: Hong Li, James R. Blakley, Rita H. Wouhaybi, John B. Vicente, **Mark D. Yarvis**, "Cloud-Assisted Method and Service for Application Security Verification," Issued August 30, 2016, assigned to Intel Corp. *(cloud computing, security)*

31. U.S. Patent No. 9,521,126: **Mark Yarvis**, Joshua Boelter, Sharad Garg, Hong Li, "Processing Data Privately in the Cloud," Issued December 13, 2016, assigned to Intel Corp. *(cloud computing, security and privacy)*
32. U.S. Patent No. 9,568,972: **Mark Yarvis**, Samuel Benn, Soethiha Soe, Mark MacDonald, and Dominic Fulginiti, "Coordinated Multi-Device Power Management," Issued February 14, 2107, assigned to Intel Corp. *(platform management, context, recommendation)*
33. U.S. Patent No. 9,615,254: Christopher J. Lord, **Mark Yarvis**, and Ahmad Khoshnevis, "Wireless Power Transmitting Devices, Methods for Signaling Access Information for a Wireless Communication Network and Method for Authorizing a Wireless Power Receiving Device," Issued April 4, 2017, assigned to Intel Corp. *(wireless power, authentication and authorization)*
34. U.S. Patent No. 9,716,756: Hong Li, John B. Vicente, **Mark D. Yarvis**, James R. Blakley, "Cloud Data Storage Location Monitoring," Issued July 25, 2017, assigned to Intel Corp. *(cloud)*
35. U.S. Patent No. 9,721,001: Ceara Chewning, Christopher J. Lord, **Mark D. Yarvis**, "Automatic Question Detection in Natural Language," Issued Aug. 1, 2017, assigned to Intel Corp. *(Natural Language Processing)*
36. U.S. Patent No. 9,942,317: John B. Vicente, James R. Blakley, Hong Li, **Mark D. Yarvis**, "Ad Hoc Decentralized Cloud Infrastructure," Issued April 10, 2018, assigned to Intel Corp. *(cloud)*
37. U.S. Patent No. 9,985,797: Rita H. Wouhaybi, **Mark D. Yarvis**, Bradut Vrabete, "Appliance State Recognition Device and Methods," Issued May 29, 2018, assigned to Intel Corp. *(context)*
38. U.S. Patent No. 10,051,322: Chieh-yih Wan, **Mark D. Yarvis**, Sharad K. Garg, Marcelino Ford-levine, "Validation of TV Viewership Utilizing Methods, Systems and Computer Control Logic," Issued Aug. 14, 2018, assigned to Intel Corp. *(context)*
39. U.S. Patent No. 10,082,574: Rita H. Wouhaybi, **Mark D. Yarvis**, Sharad K. Garg, "System, Method and Computer Program Product for Human Presence Detection Based on Audio," Issued Sept. 25, 2018, assigned to Intel Corp. *(context)*
40. U.S. Patent No. 10,181,052: Hong Li, Sharad K. Garg, **Mark D. Yarvis**, Joshua Boelter, "Notification of Contact Status of Remote User," Issued Jan 15, 2019, assigned to Intel Corp. *(context)*
41. U.S. Patent No. 10,274,911: Anantha Deepthi Uppala, Kara E. Jackson, **Mark D. Yarvis**, David J. Cobbley, Andrew S. Dickinson, Milind Pandit, "Conversational Interface for Matching Text of Spoken Input Based on Context Model," Issued April 30, 2019, assigned to Intel Corp. *(Natural Language Processing, context, personal assistance)*
42. U.S. Patent No. 10,341,133: Rita Wouhaybi, **Mark D. Yarvis**, Bradut Vrabete, "Appliance State Recognition Device and Methods," Issued July 2, 2019, assigned to Intel Corp. *(context)*
43. U.S. Patent No. 10,459,514: **Mark Yarvis**, Samuel Benn, Soethiha Soe, Mark MacDonald, and Dominic Fulginiti, "Coordinated Multi-Device Power Management," Issued Oct. 26, 2019, assigned to Intel Corp. *(platform management, context, recommendation)*
44. U.S. Patent No. 10,497,043: **Mark D. Yarvis**, Anantha Deepthi Uppala, "Online Clothing E-Commerce Systems and Methods with Machine-Learning Based Sizing Recommendation," Issued Dec 3, 2019, assigned to Intel Corp. *(context, personalization)*
45. U.S. Patent No. 10,554,437: Rita Wouhaybi, **Mark D. Yarvis**, Bradut Vrabete, "Appliance State Recognition Device and Methods," Issued Feb. 4, 2020, assigned to Intel Corp. *(context)*
46. U.S. Patent No. 10,594,791: Hong Li, John B. Vicente, **Mark D. Yarvis**, James R. Blakley, "Cloud Data Storage Location Monitoring," Issued March 17, 2020, assigned to Intel Corp. *(cloud)*
47. U.S. Patent No. 10,739,761: Robert Chavez, Rita H. Wouhaybi, **Mark Yarvis**, Kirk Smith, "Scalable Edge Compute in a Distributed Control Environment," Issued Aug. 11, 2020, assigned to Intel Corp. *(edge, manageability)*
48. U.S. Patent No. 10,868,895: Rita H. Wouhaybi, Robert Chavez, **Mark Yarvis**, John Vicente, Kirk Smith, "Distributed Dynamic Architecture for Error Correction," Issued Dec 15, 2020, assigned to Intel Corp. *(edge)*
49. U.S. Patent No. 11,032,365: John Vicente, James Blakley, Hong Li, **Mark Yarvis**, "Ad Hoc Decentralized Cloud Infrastructure," Issued June 8, 2021, assigned to Intel Corp. *(cloud computing)*

50. U.S. Patent No 11,102,028: Rita H. Wouhaybi, **Mark D. Yarvis**, Bradut Vrabete, "Appliance State Recognition Device and Methods," Issued Aug 24, 2021, assigned to Intel Corp. *(context)*
51. U.S. Patent No 11,265,402: Rita H. Wouhaybi, Robert Chavez, **Mark Yarvi**s, John Vicente, Kirk Smith, "Distributed Dynamic Architecture for Error Correction," Issued Mar 1, 2022, assigned to Intel Corp. *(edge)*
52. U.S. Patent No 11,296,902: **Mark D Yarvis**, Aaron R. Berck, Sharad K. Garg, Casey T. Rathbone, Andrew G. Shirtz, Ron Kuruvilla Thomas, Xubo Zhang, "Adaptive Deployment of Applications," Issued Apr 5, 2022, assigned to Intel Corp. *(edge, manageabiltiy)*
53. U.S. Patent No 11,330,087: Rita H. Wouhaybi, John Vicente, Kirk Smith, Robert Chavez, **Mark Yarvis**, et al., "Distributed Software-Defined Industrial Systems", Issued May 10, 2022, assigned to Intel Corp. *(industrial edge)*
54. U.S. Patent No 11,595,473: John B. Vicente, James R. Blakley, Hong Li, **Mark D. Yarvis**, "Ad Hoc Decentralized Cloud Infrastructure," Issued Feb 28, 2023, assigned to Intel Corp. *(cloud)*
55. U.S. Patent No 11,637,918: **Mark Yarvis**, Rita H. Wouhaybi, Ron Kuruvilla Thomas, Casey Rathbone, Aaron R. Berck, Sharad Garg, Robert Chavez, Kirk Smith, Mandeep Shetty, Xubo Zhang, Ansuya Negi, "Self-Descriptive Orchestratable Modules in Software-Defined Industrial Systems," Issued April 25, 2023, assigned to Intel Corp. (edge, manageability)
56. U.S. Patent No 11,758,031: Rita H. Wouhaybi, John Vicente, Kirk Smith, Robert Chavez, **Mark Yarvis**, et al., "Distributed Software-Defined Industrial Systems", Issued Sept 12, 2023, assigned to Intel Corp. *(industrial edge)*
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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.
3. Co-author, Open Process Automation Specification (O-PAS) on Orchestration (2023)

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. Konstantina Papagiannaki, **Mark Yarvis**, W. Steven Conner, *CRAWDAD dataset intel/home* (v. 2006-04-16), http://crawdad.org/intel/home/20060416, doi:10.15783/C7V886, Apr 2006.

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 27th 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 28th Annual Conference of the IEEE Communications Society (INFOCOM 2009)
- Second International Workshop on Social Aspects of Ubiquitous Computing Environments (SAUCE 2009)
- The 29th Annual Conference of the IEEE Communications Society (INFOCOM 2010)
- Wireless-Life Sciences Alliance (WLSA) Wireless Health 2010
- The 30th Annual Conference of the IEEE Communications Society (INFOCOM 2011)
- Wireless-Life Sciences Alliance (WLSA) Wireless Health 2011
- The 31st Annual Conference of the IEEE Communications Society (INFOCOM 2012)
- The 32st Annual Conference of the IEEE Communications Society (INFOCOM 2013)
- The 33rd Annual Conference of the IEEE Communications Society (INFOCOM 2014)
- The 34rd Annual Conference of the IEEE Communications Society (INFOCOM 2015) *(recognized for distinguished service)*
- The 35rd Annual Conference of the IEEE Communications Society (INFOCOM 2016)
- The 36rd Annual Conference of the IEEE Communications Society (INFOCOM 2017) *(recognized for distinguished service)*
- The 37rd Annual Conference of the IEEE Communications Society (INFOCOM 2018)
- The 40rd Annual Conference of the IEEE Communications Society (INFOCOM 2021) *(recognized for distinguished service)*
- The 41st Annual Conference of the IEEE Communications Society (INFOCOM 2022) *(recognized for distinguished service)*
- The 42nd Annual Conference of the IEEE Communications Society (INFOCOM 2023)

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

Community Service

Board of Directors, Bauer Crest Estates Homeowners Association, Secretary (May 2011 – May 2013), President (May 2013 – *May 2017*)

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
- GC8A6BX, "Forest Bookmark II," Portland, OR

US Citizen

A current version of this document is available online: http://yarvisfamily.com/mark/Vita/Vita_Yarvis.pdf

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