Stephen R. Palm

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Professional Summary: Over 25 years of technical experience, specializing for the last 14 years in wireline and wireless data communication technologies, including 802.11 wireless local area networks, twisted pair and coxial cable based home networking, DSL and voice-band modems. Responsibilities have included architecture design, technical evangelism, algorithm design, performance evaluation, optimization, and particularly the standardization of data communication technologies.

Education:

Ph.D. Electrical Engineering
The University of Tokyo, RCAST March 1999
Dissertation: Teleoperation via Bilateral Behavior Media: Visual Based Teleoperation Control with Accumulation and Assistance (Robotics & Image Processing)

M.S. Electrical & Computer Engineering
Carnegie Mellon University. May 1989
Thesis: Enhancement of Reverberated Speech using Models of Binaural Hearing.

B.S. Electrical Engineering, Cum Laude
University of California, Irvine, June 1987
- Univ. of Cal. Regent's Scholar (4 years)
- Alumni Scholarship (4 years)
- Eta Kappa Nu Honor Society
- Tau Beta Pi Engineering Honor Society

Experience:

Technical Director, Principal Engineer & Marketing Development Manager
Broadcom Corporation, Sunnyvale & Irvine, California. December 1999 – present
- Technical marketing development manger for IEEE 802.11a/b/g/e (wireless LAN) and HomePNA (phone line networking)
- CableLabs CableHome project: enthused in all focus teams; developed architecture and QoS.
- ITU-T standards development: Q4/SG15 VDSL Associate Rapporteur; Q14/SG9 Home Networking Associate Rapporteur; G.989 HomePNA 2.0
- Home networking, Quality of Service, and digital video distribution architecture development.

Senior Staff Engineer
Matsushita Graphic Communications Systems, Japan. September 1997 - December 1999
- xDSL: Technology, Intellectual Property and Market development; algorithm simulation
- ITU-T standards development: G.994.1 (G.hs) technology; G.992.1 (G.DMT) editor, G.vdsl asociate rapporteur and editor
- Founder of Japanese Industry xDSL (JIX) working group
- 1999 Nikkei BP Technology Award for DMT DBM (Annex C)

Ph.D. Student
The University of Tokyo, Japan. October 1995 - March 1999
- Designed, developed, and implemented a real time visual feedback biological cell handling system which encompassed:
  - Real-time MPEG-4 System decoders and encoders
  - Visual-Object segmentation and compression system using Matrox Genesis TI TMS320C80 board
  - 4 DOF real-time cell handling system control software
  - Development environment: MFC/C++, C, Matrox MIL, and Windows NT DDK.
  - Protocols/Standards: MPEG-4 BIFS, TCP/IP sockets
- International Conference of Robotics and Automation 1999 - Best student paper award finalist
- Published and presented several journal and conference papers

Technical Planning, Senior Systems Engineer, Systems Engineer
Rockwell International Japan, K.K., Tokyo, Japan. September 1991 - August 1997
- K56flex: Market development and field testing
- V34fax: Product Champion, ITU-T standards development, implemented world's first T.30 Annex F
- Rockwell Internet promotion: Webmaster, Email technical support
- Market analysis for Japanese digital cellular and DSP products.
- UNIX, PC, and Macintosh system administration in a heterogeneous network.
- Responsible engineer for firmware development of a 9600 bps Leased Line modem chipset.

Experience (cont.):

Research Engineer

Matsushita Electric Works, Ltd., Osaka, Japan. September 1989 - September 1991

Lead engineer responsible for developing a consumer electronic product with digital image processing. Included product conceptualization, virtual prototyping in software, and the *de facto* product manager for production design.

Teaching Assistant

Carnegie Mellon University, Electrical & Computer Engineering. Fall 1987 - Fall 1988

Weekly classes and laboratory sessions with 60 students in Logic & Processor Design, Network Analysis, and Analog Circuits.

Test Engineer I, College Summer Hire III

Rockwell International, Semiconductor Products Division. Summers 1986, 87

- Developed real-time software for testing a three bus (80286, 68000, Z80) based 9600 bps modem. Wrote a terminal emulator and system monitor in C and assembly.
- Developed the production test station for a 2400 bps modem which included designing the hardware interface to an IBM PC bus and writing the functional test software in C.

Laboratory Instructor

University of California, Irvine, School of Engineering. Winters 1986, 87

- Weekly instruction with 40 students in Computation Methods in Engineering (Programming).
- Prepared and graded exams and homework.

R & D Technician

Diagnostic Retrieval Systems, Inc. Summers 1984, 85

- Digital signal processing system check-out using logic analyzer and emulator.
- Design and assembly of analog and digital circuits.

Technician

MGM Microcomputer Specialists, Inc. Summers 1980, 81, 82, 83

Intel 8080 microprocessor based hardware design; electronic drafting; software simulation.

Standards Leadership Positions:

- Chair Technical Future Task Force – DLNA 2006-present
- Wi-Fi Alliance Recognition Award 2003 & 2005– For Outstanding Contributions to Wi-Fi.
- Technical Chair, Board of Directors, – Wi-Fi Alliance 2005-present
- Chair Application Specific Device (ASD) technical group – Wi-Fi Alliance 2004-2005
- Vice-chair QoS marketing group – Wi-Fi Alliance 2005-2006
- Editor WMM PowerSave Test Plan – Wi-Fi Alliance 2004-2005
- Editor DLNAQOS Guidelines – DLNA 2004-2005
- Editor WMM QoS Test Plan – Wi-Fi Alliance 2003-2004
- Editor Integrated Test Plan – Wi-Fi Alliance 2003
- Editor 802.11g Test Plan – Wi-Fi Alliance 2003
- Associate Rapporteur and Editor Q4/SG15, VDSL ITU-T Recommendation G.993.1 1999-2004
- Associate Rapporteur – Q14/SG9 Home Networking 2002-2005
- Vendor Architect – CableLabs CableHome 1.0 & 1.1 2000-2003
- President – HomePNA Alliance 2003
- SG9 Standards Chair –HomePNA Alliance 2002
- Associate Rapporteur and Editor Q4/SG15, ADSL ITU-T Recommendation G.992.1 1999

Intellectual Property:

- US Patents: 7277417, 7272173, 7224723, 7058123, 7051258 , 7012954 , 6999506 , 6987802 , 6952442, 6950459, 6934326, 6917647, 6901547, 6873652, 6768772, 6765957, 6751254, 6735245, 6694470, 5815199
- 11 US pending patents in wireless/wired networking, multimedia technology, xDSL handshake.
- 10 foreign patents and 40 foreign pending patents

Foreign Language: Japanese - National Proficiency Test - Level 4 (1990)

Languages / Systems: PERL, C++/C, Matlab, Assembly, Fortran, Basic, Visual Basic, Pascal, PostScript, and Lisp. Linux, UNIX, Windows, MS-DOS, Macintosh, and VMS

Interests: Sailing, Audio, Skiing, and Flying (private pilot license)

Published Papers: (Selected papers available at http://kiwin.com/school)

Journal, Conference, and Workshop Proceedings:

- Stephen PALM; "QoS Issues for In-Home Cable Services"; SCTE Emerging Technologies, January 2003
- Stephen PALM, Taketoshi MORI, Tomomasa SATO; "Teleoperation via Bilateral Behavior Media:
- Control, Accumulation, and Assistance"; ICRA99 - Session TPII-10 - Teleoperation III: Experiments and Control
- Stephen PALM, Taketoshi MORI, Tomomasa SATO: "Behavior Sampling: A recording mechanism for visually based teleoperation"; IROS 98
- Stephen PALM, Taketoshi MORI, Tomomasa SATO; "Visual Object based Teleoperation"; Submission to Special Issue on Object-Based Video Coding and Description of IEEE Transactions on Circuits and Systems for Video Technology, 1998.
- Tomomasa SATO, Taichi MITA, Takashi MIYOSHI, Stephen PALM; "Development of Cell Handling System (in Japanese)"; RSJ 98.
- Stephen PALM, Hideki MURAYAMA, Taketoshi MORI, Tomomasa SATO; "Visual Control through Status Driven Teleoperation"; RSJ Advanced Robotics, Vol 11, No. 5, pp 463-480, 1997.
- Stephen PALM, Hideki MURAYAMA, Taketoshi MORI, Tomomasa SATO; "Status Driven
- Teleoperation System -- A New Paradigm and an Application to the Microworld"; IROS 96 - Session 3-2A : Tele Operation with Visual Feedback.

Conference Presentations:

- Stephen PALM; "Transport Technologies in the Home, Current and Future"; ITU-T Workshop on Opportunities and Challenges in Home Networking, Geneva, October 2005
- Stephen PALM; "Prioritized vs. Parameterized QoS on the Home Network"; ITU-T Workshop on Home Networking and Home Services, Tokyo, June 2004
- Stephen PALM; "Wireless and Coax Transport"; ITU-T Workshop on Home Networking and Home Services, Tokyo, June 2004
- Stephen PALM; "xDSL standards"; ITU-T All Star Network Access Workshop, Geneva, June 2004
- Stephen PALM; "State of the Standards: A supplier's perspective on the state of WLAN standards"; WiFI Planet Conference, December 2003
- Stephen PALM; "Maximizing Performance in Mixed 802.11g/b Environments with WME FrameBursting"; 802.11 Planet Conference, June 2003
- Stephen PALM; "QoS Issues for In-Home Cable Services"; SCTE Emerging Technologies, January 2003
- Stephen PALM; "HPNA And 802.11 Over Coax For Digital Content Distribution"; Session: Home Networking Media; WinHEC, May 2003.
- Stephen PALM; "CableHome™ Architecture Update"; Session S18: Home Networking: Technical Needs; Broadband Home Fall 2001
- Stephen PALM; "Broadcom Home Distribution"; Session S22: Whole Home Distribution Solutions; Broadband Home Fall 2001
- Stephen PALM, "xDSL Overview and Standards Update"; Session 6-1, ICCE 2000
- Stephen PALM, Jack HOLLOWAY, Ed FRANK, "IC for Phone Line Home Network; Session 18-4, ICCE 2000
- Stephen PALM; "MPEG-7 Applications: Visually-based control"; Contribution #m3399; MPEG-7 Meeting, Tokyo, JAPAN March 1998.

Whitepapers and Articles:

- Stephen PALM; "Delivering QoS in Home IP Networks", http://www.CommsDesign.com, Feb 2004.
- Stephen PALM et al; "IEEE 802.11g: The Next Mainstream Wireless LAN Standard", Broadcom Whitepaper, http://www.54g.org, June 2003.
- Stephen PALM, David Fifield; "Running HomePNA 2.0 over existing Cable/TV Coax", WinHEC 2003.
- Per ÖDLING, Bernhard MAYR, Stephen PALM; "The Technical Impact of the Unbundling Process and Regulatory Action", IEEE Communications Magazaine, May 2000.
- Stephen PALM "Global xDSL Standards from the ITU", TeleChoice Report on xDSL, December 1998.

Standards Contributions:

- Development of Handshake for xDSL ITU-T Recommendation G.994.1 (G.hs): RB-035, D.204, CI-031, WH-024, CI-032, NF-045, WH-026, AB-026, PO-047, BM-027, D.563, D.565, NG-103, NT-031, NT- 035, HC-074, CF-068, CF-083, D.039, IC-082, BB-028, OJ-093, OJ-110