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EDUCATION

Ph.D., Electrical Engineering, University of California, San Diego (1991)

M.Eng., Electrical Engineering, Cornell University (1982)

B.S., Electrical Engineering, Polytechnic Institute of New York (1981)

PROFESSIONAL EXPERIENCE

Hewlett-Packard Laboratories

June 1999 to present

Program Manager and Research Scientist, Exascale Computing Laboratory

Principal Investigator for the DARPA-sponsored *Internet Control Plane* program. Project lead for a joint industry-academic team developing flow-oriented internet architectures and protocols to improve TCP/IP performance, culminating in HP productization. Coordinated research teams at UC Berkeley, Princeton University, Anagran Inc., Sparta Inc., UC Santa Barbara, and George Mason University.

System architect for the DARPA-sponsored *National Cyber Range* testbed for system security research.

Technical lead for HP's participation in the *PlanetLab* consortium and the NSF Global Environment for Network Investigations (*GENI*) program.

Earlier HP contributions have included managing a computer networking research group, conceiving, patenting and prototyping high-speed communications techniques for mobile wireless devices and privacy enhancing technologies.

Bell Laboratories (Lucent Technologies)

December 1991 to May 1999

Member of Technical Staff, Research

Principal Investigator and team leader researching computer networking architectures, protocols and applications. Contributions to ATM, FTTx, routing and congestion control, and digital watermarking.

Bell Laboratories (AT&T)

June 1981 to September 1986

Member of Technical Staff, Computer Networking Development Laboratory

Systems engineer and software developer for the first commercial 1Base-T local area network, ISDN-based PBXs, and UNIX-based desktop workstations.

INDUSTRY AWARDS

1996 R&D 100 Product Award — for most innovative R&D products introduced in 1995. For advances in the emerging field of digital image watermarking and related electronic commerce technologies.

ADVISORY COMMITTEES

National Research Council's *Board of Assessment for the National Institute of Standards and Technologies* - Appointed to a 5 year term (2001-5) overseeing NIST's *Information Technologies Laboratory's* research programs.

National Science Foundation: *Computer and Information Science & Engineering* panelist (2002, 2004, 2007); *Office of CyberInfrastructure* panelist (2005).

National Research Council's *Computer Science and Telecommunications Board* - Image and Instrument Integrity Planning Group; Technology for Copyright Protection (1995)

TEACHING EXPERIENCE

Rutgers University, Adjunct Faculty: CS 352 — Internet Protocols & Technology (1998)

PROFESSIONAL SERVICE

IEEE Fellow (2006); IEEE Communications Society — Member, Strategic Planning Committee (1996-97, 1998-99), Electronic Processes Committee (1994-95); ACM; ACM SIGCOMM — Member

Recent Technical Program Committees: ACM SIGCOMM VISA Workshop (2009); ANCS (2009); Information Hiding (2006 - 2008); IEEE INFOCOM (2002); WiTMemo (2006, 2007); UbiSec (2005); IEEE LANMAN (2002 - 2007), TPC Co-Chair (2002), Conference Co-Chair (2004), Steering Committee (2008)

PATENTS

Media Program Timing and Identity Delivery Method, US Pat. 7,530,086
Dynamic Generation of a Networked Information Resource, US Pat. 7,370,077
Local File Transfer, US Pat. 7,212,785
Dynamic Bandwidth Allocation in a Reservation System, US Pat. 7,143,166
Cooperative Networking Method and System, US Pat. 7,065,575
High Data Rate Communications, US Pat. 6,950,668
Advertisement Insertion in Real-Time IP Multicast, US Pat. 6,771,644
Document Copying Deterrent Method, US Pat. 6,086,706
Signal Quality Measurement, US Pat. 6,611,776.
Document Copying Deterrent Method Using Word Shifting, US Pat. 5,629,770.

EDITORIAL

Lead Guest Editor, *IEEE JSAC* issue on ATM LANs, May 1995.

REFERENCES

Professor Rene L. Cruz (Ph.D. advisor)
Dept. of ECE, Mail Code R-007, University of California, San Diego
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Prof. Nicholas F. Maxemchuk (Bell Laboratories supervisor)
Dept. of Electrical Engineering, Columbia University
New York, NY 10027 (212) 854-0580 nick@ee.columbia.edu

Prof. Henning Schulzrinne (Collaborator)
Dept. of Computer Science, Columbia University
New York, NY 10027 (212) 939-7042 schulzrinne@cs.columbia.edu

LIST OF PUBLICATIONS (BY TOPIC) — JACK BRASSIL

Wireless Networking

"Aggregating Bandwidth for Multi-homed Mobile Collaborative Communities," P. Sharma, S.J. Lee, J. T. Brassil, K. Shin, *IEEE Transactions on Mobile Computing*, vol.6, no.3, March 2007.

"Improving Aggregated Channel Performance through Decentralized Channel Monitoring," P. Sharma, S.J. Lee, J. T. Brassil, K. Shin, *Computer Networks*, vol. 50, no. 11 August 2006, pp. 1675-1691.

"Handheld Routers: Intelligent Bandwidth Aggregation for Mobile Collaborating Communities," P. Sharma, S.J. Lee, J. T. Brassil, K. Shin, *Broadnets 2004*, pp. 345-356.

"Distributed Channel Monitoring for Wireless Bandwidth Aggregation", P. Sharma, S.J. Lee, J. Brassil, K. Shin, *Proceedings of Networking 2004*, Springer-Verlag, Athens, Greece, pp. 345-356, May 2004.

Networking

"Networking Technologies in the Developing World", M.E. Fiuczynski, R. McGeer, J.T. Brassil, L.L. Peterson, D.P. Reed, *Proceedings of the Sixth International Conference on Creating, Connecting and Collaborating through Computing*, January 2008.

"NATALIE: An Adaptive, Network-Aware Traffic Equalizer", Y. He, J. Brassil, *IEEE International Conference on Communications (ICC 2007)*, Glasgow UK, June 2007.

"Improving VPN Performance over Multiple Access Links", J. Brassil, R. McGeer, R. Rajagopalan, A. Bavier, L. Roberts, B. Mark, S. Schwab *Broadnets 2008*, London UK, 2008.

"Congestion-triggered Multipath Routing based on Shortest Path Information", S. Sohn, B.L. Mark, J.T. Brassil, *Proc. IEEE Int. Conference on Computer Communications and Networks (ICCCN'06)*, Arlington, VA, pp. 191-196, Oct. 2006.

"The Case for Service Overlays (Position Paper)", J.T. Brassil, B. Mark, R. McGeer, S. Schwab, P. Sharma, P. Yalagandula, *Proc. IEEE Int. Conference on Computer Communications and Networks (ICCCN'09)*, San Francisco, CA, 2009.

J. Brassil, R. McGeer, N. Watts, S. Banerjee, P. Sharma, P. Yalagadula, D. Reed, "The CHART System: Architecture and Performance," *HP TechCon'07*, San Antonio TX, April 2007.

"Multi-path Routing Overlays: Opportunities and Problems," J. Brassil, A. Bavier, B. Mark, *DARPA Workshop on Routing Protocols and Management*, Arlington VA, 2007.

"Increasing TCP Throughput with an Enhanced Internet Control Plane", A. Bavier, et al, *Milcom 2006*, Washington DC, October 2006.

"GENI Component Reference Design", J. Brassil (Ed.), *GENI Design Document GDD-06-13*, October 2006.

"Performance Characterization of Traffic Equalizers on Heterogeneous Communication Links", J. Li, J. Brassil, *Proceedings of QShine'06*, Waterloo CA, August 2006.

"An Empirical Study of Bonded Heterogeneous Access Links," J. T. Brassil, *14th IEEE Workshop on Local & Metropolitan Area Networks (LANMAN 2005)*, Crete, September 2005.

"Distributed Monitoring for Wireless Bandwidth Aggregation," P. Sharma, S.J. Lee, J. T. Brassil, K. Shin, *Networking 2004*, pp. 537-547.

"Strict Peak Rate Enforcement at the ATM Network Entry Point," J. T. Brassil, *The 31st Allerton Conference on Communication, Control and Computing*, Univ. of Illinois, September, 1993, pp. 197-206.

"The Manhattan Street Network: A High Performance, Highly Reliable Metropolitan Area Network," J. T. Brassil, A. K. Choudhury, N. F. Maxemchuk, *Computer Networks and ISDN Systems*, vol. 26, 6-8, March, 1994, pp. 841-858.

"Peak Rate Regulation Maintains Service Quality in ATM LAN/WAN Integration," J. Brassil, *Proceedings of IEEE INFOCOM'94*, vol. 2, Toronto, June, 1994, pp. 902-909.

"Overcoming Reservation Latency in an ATM PON," J. Brassil, *Proceedings of IEEE Globecom'99*, December 1999, pp. 1155-1161.

"Nonuniform Traffic in the Manhattan Street Network," J. T. Brassil and R. L. Cruz, *Proceedings of ICC'91*, vol. 3, pp. 1647-1651, June, 1991; reprinted in *Performance Evaluation of High-Speed Switching Fabrics and Networks*, T. Robertazzi (Ed.), IEEE Press, 1992.

"Nonuniform Traffic in the Manhattan Street Network," J. T. Brassil and R. L. Cruz, *Performance Evaluation*, vol. 25, pp. 233-242, 1996.

"Broadband Networks Using Combined Trunk Group and Deflection Routing," J. T. Brassil and R. L. Cruz, *Proceedings of the 25th Annual Conference on Information Sciences and Systems*, Johns Hopkins University, pp. 935-940, March, 1991.

"Bounds on Maximum Delay in Networks with Deflection Routing," J. T. Brassil and R. L. Cruz, *IEEE Transactions on Parallel and Distributed Systems*, vol 6, no 7, July 1995, pp. 724-732.

"Bounds on Maximum Delay in Networks with Deflection Routing," J. T. Brassil and R. L. Cruz, *Proceedings of the 29th Allerton Conference on Communication, Control and Computing*, July, 1991.

Internet Streaming Media

"Large-Scale Personalized Video Streaming with Program Insertion Proxies," J. Brassil, T. Kim, *IEEE Communications Magazine*, vol. 42, no. 8, August 2004.

"Smoothing Coarse-Grain Rate Increases to Improve Streaming Media Service Quality," J. Brassil, *Proceedings of the 38th Annual Conference on Information Sciences and Systems*, Princeton University, March 2004.

"Dynamic Program Insertion in High Quality Video over IP", T. Kim, J. T. Brassil, *Proceedings of the 13th International Workshop on Network and Operating System Support for Digital Audio and Video (NOSSDAV'03)*, Monterey CA, June 2003.

"CDNs for Personal Broadcasting and Individualized Reception", *Proceedings of the 7th International Workshop on Web Content Caching and Distribution*, Boulder CO, June 2002.

"Structuring Internet Media Streams with Cueing Protocols," J. T. Brassil, H. Schulzrinne, *IEEE/ACM Transactions on Networking*, vol. 10, no. 4, August 2002, pp. 466-476.

"RTP Payload Format for Program Cues," J. T. Brassil, H. Schulzrinne, *Internet Draft*, Audio/Video Transport Working Group, November, 2000.

"Enhancing Internet Streaming Media with Cueing Protocols," J. T. Brassil, H. Schulzrinne, *Proceedings of IEEE Infocom'01*, April, 2001. **Best paper award nominee** (top 5 of 830 submissions).

"Program Insertion in Real-Time IP Multicasts," J. T. Brassil, S. Garg, H. Schulzrinne, *ACM Computer Communication Review*, vol. 29, no. 2, April, 1999, pp. 49-68.

"Active Network Error Recovery for Continuous Media Applications", J. Brassil, *SPIE Symposium on the Performance and Control of Network Systems*, vol. 3231, November 1997, pp. 196-207.

Privacy

"Technical Challenges in Location-Aware Video Surveillance Privacy", Jack Brassil, *Protecting Privacy in Video Surveillance*, Senior, Andrew (Ed.), Springer, 2009, ISBN: 978-1-84882-300-6.

"Using Mobile Communications to Achieve Privacy from Video Surveillance," J. Brassil, *Proceedings of the First Workshop on Security in Systems and Networks*, IPDPS 2005, Denver CO, April 2005.

Information Hiding

"Tracing the Source of a Shredded Document," J. Brassil, *Proceedings of the Fifth Workshop on Information Hiding*, Springer-Verlag, Amsterdam, October 2002.

"Copyright Protection for the Electronic Distribution of Text Documents," J. Brassil, S. Low, N. Maxemchuk, L. O’Gorman, *Proceedings of the IEEE (Invited Paper)*, vol. 87 no. 7, pp. 1181-1196, July 1999.

"Marking Text Features of Document Images to Deter Illicit Dissemination", J. T. Brassil, S. Low, N. F. Maxemchuk, L. O’Gorman, *International Conference on Pattern Recognition*, Haifa, Israel, Oct., 1994.

"Marking of Document Images with Codewords to Deter Illicit Dissemination," J. Brassil, S. Low, N. Maxemchuk, L. O’Gorman, *Proceedings of the Third Annual Symposium on Document Analysis and Information Retrieval*, Las Vegas, NV, April, 1994.

"Electronic Marking and Identification Techniques to Discourage Document Copying," J. Brassil, S. Low, N. Maxemchuk, L. O’Gorman, *Proceedings of IEEE INFOCOM’94*, vol. 3, Toronto, June, 1994, pp. 1278-1287.

"Electronic Marking and Identification Techniques to Discourage Document Copying," J. Brassil, S. Low, N. Maxemchuk, L. O’Gorman, *IEEE Journal on Selected Areas in Communications*, vol. 13 no. 8, October 1995, pp. 1495-1504.

"Document Marking and Identification using both Line and Word Shifting," S. Low, N. Maxemchuk, J. Brassil, L. O’Gorman, *Proceedings of IEEE INFOCOM’95*, Boston MA, April, 1995.

"Hiding Information in Document Images," J. Brassil, S. Low, N. Maxemchuk, L. O’Gorman, *Proceedings of the 29th Annual Conference on Information Sciences and Systems*, Johns Hopkins University, March 1995, pp 482-489.

"Watermarking Document Images with Bounding Box Expansion," J. Brassil, L. O’Gorman, *Proceedings of the First Workshop on Information Hiding*, Springer-Verlag, Cambridge University, May 1996.

"SEPTEMBER: Secure Electronic Publishing Trial", J. Brassil, A. Choudhury, D. Kristol, A. Lapone, S. Low, N. Maxemchuk, L. O’Gorman, *IEEE Communications Magazine*, vol. 34, no. 5, May 1996, pp. 48-55.

"Internet Access to IEEE Journals: The SEPTEMBER Trial," H. Schulzrinne, A.K. Choudhury, J. Brassil, *Proceedings of Documents in Public Networks — Applications and Experiences*, Darmstadt, Germany, November 1995.

Distributed Systems, Algorithms & Protocols

"Content Services Network: Architecture & Protocols," W. Y. Ma, B. Shen, J. T. Brassil, *Proceedings of the 6th International Workshop on Web Caching and Content Distribution*, June, 2001.

"A Two Phase Auction Algorithm for Highly Asymmetric Assignment Problems", N. Cohen, J. Brassil, *Proceedings of the 34th Allerton Conference on Communication, Control and Computing*, Univ. of Illinois, October 1996, pp. 447-456.

"A Parallel Pruning Technique for Highly Asymmetric Assignment Problems", N. Cohen and J. Brassil, *IEEE Transactions on Parallel and Distributed Systems*, vol. 11, no. 6, June 2000, pp. 550-558.