# *Curriculum Vitae*

## Vijay K. Gurbani, Ph.D.

Email: vkg@acm.org / tel: +1 630 930 3212 / Address: 4497 Saint Tropez Dr., Lisle, IL 60532
http://www.cs.iit.edu/~vgurbani

**RESEARCH INTERESTS**

Multimedia communications protocols and networks, natural language processing, applied machine learning in multimedia communication networks and protocols, security in multimedia communications and protocols, and Inner Source.

**EDUCATION**

**Ph.D., Computer Science**, Illinois Institute of Technology, Chicago, Illinois        Dec. 2004
Thesis: Service-Oriented Computing: Enabling Cross Network Services Between the
              Internet and the Telecommunications Network
Advisor: Prof. Xian-He Sun

**M.Sc., Computer Science**, Bradley University, Peoria, Illinois        Dec 1990
Thesis: Implementing the OSI Session and Presentation Layers in the Internet Protocol

**B.Sc., Computer Science** (minor: **Mathematics**)        May 1988
Bradley University, Peoria, Illinois

**APPOINTMENTS**

**Vail Systems, Inc.**
Chief Data Scientist        Dec. 2018-present
Principal Data Scientist        Sep. 2018-Dec.2018

**Bell Laboratories, Nokia Networks (formerly Alcatel-Lucent)**, Naperville, Illinois
Distinguished Member of Technical Staff        2001-2018
Member of Technical Staff        1998-2001

**Illinois Institute of Technology**, Department of Computer Science, Chicago, Illinois
Research Associate Professor        2021-present
Co-Director, Real-Time Communications Laboratory        2020-present
Adjunct Professor        2009-2021
Lecturer        1997-1999

**University of Luxembourg,** Luxembourg
Research Fellow, Interdisciplinary Center for Security, Reliability and Trust        2014-present

**Net Guru Technologies, Inc.,** Chicago, Illinois        1997-1998
Director, Internet Consulting and Web Security

**Tellabs Operations, Inc.**, Lisle, Illinois
Senior Member of Technical Staff        1995-1997

**Fermi National Accelerator Laboratory**, Batavia Illinois
Computing Professional        1992-1995

**Cap Gemini America**, Chicago, Illinois
Member of Technical Staff        1990-1992

**Bradley University**, Department of Computer and Information Sciences, Peoria, Illinois
Graduate Teaching and Research Assistant,
Unix Programmer, Text Processing Department        1988-1990

**AWARDS/HONORS**

Lucent Technologies, Inc. Chairman Award, July 2006.
Core Bell Labs Teamwork Award, November 2005

Best Speaker Award (as voted by the conference chairs), Eurescom, May 2005.
Central Bell Labs Teamwork Award, February 2005
Best Student Paper Award (for IEEE Transaction on Networking paper), Department of
  Computer Science, Illinois Institute of Technology, November 2004
Employee of the Year Award, Cap Gemini America, 1992
Academic Excellence Scholarship Award, Bradley University, 1989, 1990

**PUBLICATIONS
(GOOGLE H-INDEX: 30)**

### Books and chapters

1. **Vijay K. Gurbani**, James D. Herbsleb, and Anita Garvert, *From Corporate Open Source to InnerSource: A Serendipitous Journey at Bell Laboratories*, book chapter in *Adopting Inner Source: Principles and Case Studies,* (edited by Klaas Jan-Stol and Danese Cooper), O'Reilly Publications, July 2018.
2. Prasad, A.R., Buford, J.F. and **Gurbani, V.K.** (Editors), *Advances in Next Generation Services and Service Architectures*, River Publishers, June 2011.
3. Prasad, A.R., Buford, J.F. and **Gurbani, V.K.** (Editors), *Future Internet Services and Service Architectures*, River Publishers, April 2011.
4. **Gurbani, V.K.** and Khirman, S., "Seven days in the life of two BitTorrent swarms", Book chapter in a monograph entitled *Evolution of Peer-to-peer technologies: Optimization, security and applications*, Bertrand Mathieu (Ed.), Hermes Science Publishing, Ltd., April-May 2010.
5. **Gurbani, V.K.**, and Sun, X.-H., "Architecting the Telecommunications Evolution: Towards Converged Network Services," *CRC Press*, September 2006.
6. Pabrai, U.O., **Gurbani, V.K.**, Teitelbaum, J.T., Gregory, S.D., and King, G.A., "Webmaster Engineer Certification Handbook," *McGraw Hill Publishing Company*, November 1997.
7. Pabrai, U.O., and **Gurbani, V.K.**, "Internet and TCP/IP Network Security," *McGraw Hill Publishing Company*, September 1996.

### Journal Papers

1. Lida Kuang, Samruda Pobbathi, Yuri Mansury, Matthew A. Shapiro, and **Vijay K. Gurbani**, "Predicting age and gender from network telemetry: Implications for privacy and impact on policy," PLoS ONE 17(7): e0271714, July 2022. Open Access DOI https://doi.org/10.1371/journal.pone.0271714
2. **Vijay K. Gurbani**, Henning Schulzrinne, Cynthia Hood, Radu State, and Anita Nikolich, "When DNS goes dark: Understanding privacy and shaping policy of an evolving protocol," In *TPRC 48: Research Conference on Communications, Information, and Internet Policy,* Feb 17-19, 2021. (Available online at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3749764)
3. Lida Kuang, Samruda Pobbathi, Yuri Mansury, Matthew Shapiro, and **Vijay K. Gurbani***, "Predicting age and gender from network telemetry: Implications for privacy and impact on policy,"* Under review, PLOS One, 2021.
4. Marchal, S., Mehta, A., **Gurbani, V.K.**, State, R., Ho, T.K. and Sancier-Barbosa, F., "Mitigating mimicry attacks in the Session Initiation Protocol (SIP)," In *IEEE Transactions on Network and Services Management (TNSM),* pp. 467-482, 12(3), 2015.
5. Basu, A., Fleming, S., Stanier, J., Naicken, S., Wakeman, I. and **Gurbani, V.K.**, "The state of peer-to-peer network simulators", *ACM Computing Surveys*, 45(4), pp. 46:1—46:25, 2013.
6. Baset, S.A., **Gurbani, V.K.**, Johnston, A.B., Kaplan, H., Rosen, B. and Rosenberg, J.D., "The Session Initiation Protocol (SIP): An evolutionary study", *Journal of Communications (JCM)*, Special issue on IP Communications Services, edited by John Buford, Vijay K. Gurbani and Anand Prasad, 7(2), pp. 89-105, February 2012.
7. Bessis, T., **Gurbani, V.K.** and Rana, A., "Session Initiation Protocol (SIP) Firewall for Internet Multimedia Subsystem (IMS) Core," *Bell Labs Technical Journal*, 15(4), pp. 169-188, March 2011
8. **Gurbani, V.K.**, and Kolesnikov, V., "A Survey and Analysis of Media Keying Techniques in the Session Initiation Protocol (SIP)," In *IEEE Communications Surveys*

*and Tutorials*, 13(2), pp. 183—198, 2011.

9.  **Gurbani, V.K.**, Garvert, A., and Herbsleb, J.D., "Managing a Corporate Open Source Software Asset," *Communications of the ACM,* 53(2), pp. 155-159, February 2010.

10. **Gurbani, V.K.**, Hilt, V., Rimac, I., Tomsu, M., and Marocco, E, "A Survey of Research on the Application-Layer Traffic Optimization Problem and the Need for Layer Cooperation," *IEEE Communications*, 47(8), pp. 107-112, August 2009.

11. Cook, D.L., **Gurbani, V.K.**, and Daniluk, M., "Phishwish: A Simple and Stateless Phishing Filter," *Journal on Security and Communication Networks (SCN),* 2(1), pp. 29-43, January/February 2009, John Wiley & Sons.

12. **Gurbani, V.K.**, and McGee, A., "An Early Application of the Bell Labs Security Framework to Analyze Vulnerabilities in the Internet Telephony Domain," *Bell Labs Technical Journal*, 12(3), pp. 7-19, November 2007.

13. **Gurbani, V.K.**, Jagadeesan, L.J., and Mendiratta, V., "Characterizing Session Initiation Protocol (SIP) Network Performance and Reliability," *Springer Verlag Lecture Notes in Computer Science (LNCS)*, Vol. 3694, pp. 196-211, October 2005.

14. **Gurbani, V.K.**, Sun, X-H., and Brusilovsky, A., "Inhibitors for Ubiquitous Deployment of Services in the Next Generation Network," *IEEE Communications*, 43(9), pp. 116-121, September 2005.

15. **Gurbani, V.K.**, and Sun, X-H., "A Systematic Approach for Closer Integration of Cellular and Internet Services," *IEEE Network*, 19(1), pp. 26-32, Jan-Feb, 2005.

16. **Gurbani, V.K**., and Sun, X-H., "Terminating Telephony Services on the Internet," *IEEE/ACM Transactions on Networking*, 12(4), pp. 571-581, August 2004.

17. Arlein, R.M., and **Gurbani, V.K.**, "An Extensible Framework for Constructing Session Initiation Protocol (SIP) User Agents," *Bell Labs Technical Journal*, 9(3), pp. 87-100, November, 2004.

18. **Gurbani, V.K.**, and Jain, R., "Contemplating Some Open Challenges in the Session Initiation Protocol (SIP)," *Bell Labs Technical Journal*, Vol. 9(3), pp. 255-269, November 2004.

19. Jayadevan, G., **Gurbani, V.K.**, and Arlein, R.M., "Adapting SIP for Application Server Requirements in 3G/UMTS networks," *Bell Labs Technical Journal*, 9(3), pp. 57-71, November 2004.

20. **Gurbani, V.K.**, and Jain, R., "Transport Protocol Considerations for Session Initiation Protocol (SIP) networks," *Bell Labs Technical Journal*, 9(1), pp. 83-97, July 2004.

21. **Gurbani, V.K.**, and Liu, K.Q., "Session Initiation Protocol: Service Residency and Resiliency," *Bell Labs Technical Journal*, 8(1), pp. 83-94, July 2003.

22. Dianda, J.R., **Gurbani, V.K.**, and Jones, M.H., "Session Initiation Protocol (SIP) Services Architecture," *Bell Labs Technical Journal*, 7(1), pp. 3-23, July 2002.

23. Chiang, T-C., **Gurbani, V.K.**, and Reid, J.B., "The Need for Third Party Call Control," *Bell Labs Technical Journal*, 7(1), pp. 41-46, July 2002.

24. **Gurbani, V.K.**, Chiang, T-C., and Kumar, S., "SIP: A Routing Protocol," *Bell Labs Technical Journal*, 6(2), pp. 136-152, December 2001.

25. Chiang, T-C., Douglas, J., **Gurbani, V.K.**, Montgomery, W.A., Opdyke, W.F., Reddy, J., and Vemuri, K., "IN Services for Converged (Internet) Telephony," *IEEE Communications*, 38(6), pp. 108-115, June 2000.

26. **Gurbani, V.K.**, "Managing embedded TCP servers," *Embedded Systems Programming*, 10(10), pp. 106-114, October 1997

**Conference proceedings and proceedings from selected refereed workshops**

1.  Jordan Hosier, Yu Zhou, Nikhita Sharma, and **Vijay K. Gurbani**, "Lightweight domain adaptation: A filtering pipeline to improve accuracy of an Automatic Speech Recognition (ASR) engine," Accepted for publication, *ACM International Conference on Knowledge Discovery and Machine Learning (KDML 2021),* December 2021.

2.  Samuel Davidson, Yu Zhou, Jordan Hosier, and **Vijay K. Gurbani**, "Improved Named Entity Recognition for Noisy Call Center Transcripts," Accepted for publication in the 7th Workshop on Noisy User-generated Text (W-NUT), 2021 Conference on Empirical Methods in Natural Language Processing (EMNLP 2021), November, 2021.

3.  Shivam Kulkarni, Luis Barbado, Jordan Hosier, Yu Zhou, Siddartha Rajagopalan, and

**Vijay K. Gurbani**, "Project Vāc: Can a Text-to-Speech Engine Generate Human Sentiments?", Accepted for publication in the 11th IEEE Conference on Speech Technology and Human Computer Dialogue (SpeD 2021), Bucharest, Romania, October 2021.

4. Elizabeth Soper, Jordan Hosier, Dustin Bales, and **Vijay K. Gurbani**, "Semantic search pipeline: From query expansion to concept forging," Accepted for publication in the *37th IEEE International Conference on Data Engineering (ICDE)*, Greece, April 2021.

5. Sean Rivera, **Vijay K. Gurbani**, Sofiane Lagraa, Antonio Ken Iannillo, and Radu State, "Leveraging eBPF to preserve user privacy for DNS, DoT, and DoH queries," In *Proceedings of the 15th International Conference on Availability, Reliability and Security (ARES '20),* Association for Computing Machinery, New York, NY, USA, Article 78, pp. 1–10. DOI:https://doi.org/10.1145/3407023.3407041

6. Hosier J., Kalfen J., Sharma N., **Gurbani V.K.,** "A Systematic Study of Open Source and Commercial Text-to-Speech (TTS) Engines," In: Sojka P., Kopeček I., Pala K., Horák A. (eds) *Text, Speech, and Dialogue. TSD 2020. Lecture Notes in Computer Science*, vol 12284. Springer, Cham. https://doi.org/10.1007/978-3-030-58323-1_34

7. Jordan Hosier, **Vijay K. Gurbani**, and Neil Milstead, "Disambiguation and error resolution in call transcripts," In proceedings of the 2019 *IEEE International Conference on Big Data (Big Data)* pp. 4602-4607, 2019.

8. Srinivas Iyengar, **Vijay K. Gurbani**, Yu Zhou and Sameerkumar Sharma, "Opportunistic prefetching of cellular Internet of Things (IoT) device context," in Proceedings of the *1st International Workshop on Edge Computing and Networking (ECN)*, held in conjunction with IEEE 27th International Conference on Computer Communications and Networks (ICCCN 2018), August 2018.

9. Eric Falk, **Vijay K. Gurbani** and Radu State, "Query-able Kafka: An agile data analytic pipeline for mobile wireless networks," In *Proceedings of the 43rd International Conference of Very Large Data Bases (PVLDB),* pp. 1646-1657, 10(12), Munich, Germany, August 2017.

10. Eric Falk, Ramino Camino, Radu State and **Vijay K. Gurbani**, "On non-parametric models for detecting outages in the mobile network," In *Proceedings of 2nd IFIP IEEE International Workshop on Management of 5G Networks (IEEE 5GMan)*, pp. 1139-1142, Lisbon, Portugal, May 2017.

11. **Vijay K. Gurbani**, Dan Kushnir, Veena Mendiratta, Chitra Phadke, Erick Falk and Radu State, "Detecting and predicting outages in mobile networks with log data," In *Proceedings of IEEE International Conference on Computer Communications (ICC)*, pp. 1-7, Paris, France, May 2017.

12. Samuel Jero, **Vijay K. Gurbani**, Ray Miller, Bruce Cilli, Chuck Payette and Sameer Sharma, "Dynamic control of real-time communications (RTC) using SDN: A case study of a 5G end-to-end service," In *IEEE/IFIP Network Operations and Management Symposium (NOMS 2016)*, pp. 895-900, Istanbul, Turkey, April 2016.

13. **Gurbani, V.K.**, Migliosi, A., State, R., Payette, C., Cilli, B. and Engel, T., "A characterization of short-video and distributed hot-spot activity in Instagram," in press, *Proceedings of the ACM International Conference on Principles, Systems and Applications of IP Telecommunications (IPTComm 2015)*, Chicago, Illinois, October 2015.

14. Jagadeesan, L., Mc Bride, A., **Gurbani, V.K.** and Yang, J., "Cognitive security: Security analytics and autonomics for virtualized networks," in press, *Proceedings of the ACM International Conference on Principles, Systems and Applications of IP Telecommunications (IPTComm 2015)*, Chicago, Illinois, October 2015.

15. Fossati, T., **Gurbani, V.K.**, Kolesnikov, V., "Love all, trust few: On trusting intermediaries in HTTP," In Proceedings of the *ACM SIGCOMM Workshop on Hot Topics in Middleboxes and Network Function Virtualization (HotMiddlebox 2015)*, pp. 1-6, August 2015.

16. Zhang, Y., Clouet, A., Awotayo, O.S., Davids, C. and **Gurbani, V.K.**, "Benchmarking the Session Initiation (SIP) protocol," accepted for publication, In *IEEE 2015 Annual*

*Communications Quality and Reliability Workshop* (CQR), pp. 1-6, May 2015.

17. **Gurbani, V.K.**, Goergen, D., State, R. and Engel, T., "Making historical connections: Building Application Layer Traffic Optimization (ALTO) network and cost maps from public broadband data," In *10th International IEEE Conference on Network and Service Management (CNSM 2014)*, pp. 193—198, Rio De Janeiro, Brazil, November 2014

18. Goergen, D., Migliosi, A., **Gurbani, V.K.**, State, R. and Engel, T., "Spatial and temporal analysis of Twitter: A tale of two countries," In *7th ACM International Conference on Principles, Systems and Applications of IP Telecommunications (IPTComm 2014)*, Chicago, Illinois, Sept.-Oct., 2014.

19. Al-Omari, D., **Gurbani, V.K**. and Anjali, T., "A novel architecture for a Computer Network Defense (CND) system using Content Addressable Networks (CAN)," In *1st International Workshop on Management and Security Technologies for Cloud Computing (ManSec-CC)*, held in conjunction with IEEE Globecom 2012, pp.758-762, December 2012.

20. Scharf, M., Voith, T., Roome, W., Gaglianello, B., Steiner, M., Hilt, V., and **Gurbani, V.K**., "Monitoring and abstraction for networked clouds", In *Proceedings of the 16th International Conference on Intelligence in Next Generation Networks (ICIN)*, pp. 80 - 85, Berlin, Germany, October 2012.

21. Steiner, M., Gaglianello, B., **Gurbani, V.K.**, Hilt, V., Roome, W.D., Scharf, M. and Voith, T., "Network-aware service placement in a distributed cloud environment", *Proceedings of the ACM SIGCOMM 2012 Conference on Applications, Technologies, Architectures, and Protocols for Computer Communications* (SIGCOMM), pp. 73-74, Helsinki, Finland, August 2012.

22. Mehta, A., Hantehzadeh, N., **Gurbani, V.K.**, Ho, T.K. and Sancier, F.,  "On using multiple classification systems for Session Initiation Protocol (SIP) anomaly detection," In proceedings of the  *IEEE International Conference on Communications (ICC)*, pp. 1101-1106, June 2012, Ottawa, Canada

23. **Gurbani, V.K.**, Scharf, M., Lakshman, T.V. and Hilt, V., "Abstracting network state in Software Defined Networks (SDN) for rendezvous services," In *Workshop on Software Defined Networks (SDN)*, held in conjunction with *IEEE International Conference on Communications (ICC)*, pp. 6627—6632, June 2012.

24. Mehta, A., Hantehzadeh, N., **Gurbani, V.K.**, Ho, T.K., Koshiko, J. and Vishwanathan, R., "On the inefficacy of Euclidean classifiers for detecting self-similar Session Initiation Protocol (SIP) messages," In Proceedings of the *12th IFIP/IEEE International Symposium on Integrated Network Management (IM 2011)*, pp. 329-336, May 2011, Dublin, Ireland.

25. Hantehzadeh, N., Mehta, A., **Gurbani, V.K.**, Gupta, L., Ho, T.K. and Wilathgamuwa, G., "Statistical analysis of self-similar Session Initiation Protocol (SIP) messages for anomaly detection," In Proceedings of the *4th IFIP/IEEE International Conference on New Technologies, Mobility, and Security (NTMS 2011),* pp. 1-5, February 2011, Paris, France.

26. **Gurbani, V.K.**, Burger, E., Anjali, T., and Davids, C., "SIP CLF: A Common Log Format (CLF) for the Session Initiation Protocol", In  *Usenix workshop on Managing Systems via Log Analysis and Machine Learning Techniques (SLAML '10)*, October 3, 2010, Vancouver, Canada.

27. **Gurbani, V.K.** and Kolesnikov, V., "Work in progress: A secure and lightweight scheme for media keying in the Session Initiation Protocol (SIP)," *Proceedings of the 4th Annual ACM Conference on Principles, Systems and Applications of IP Telecommunications (IPTComm 2010)*, August 2-3, 2010, Munich, Germany.

28. Cook, D.L., **Gurbani, V.K.**, and Daniluk, M., "Phishwish: A Stateless Phishing Filter using Minimal Rules," *Proceedings of the 12th International Conference on Financial Cryptography and Data Security (FC 08)*, LNCS 5143, Tsudik, G. (Ed.), Springer-Verlag, pp. 182-186,  2008.

29. **Gurbani, V.K.**, Cook, D.L., Menten, L.E., and Reddington, T.B., "A Case Study on Constructing a Security Event Management System," *Proceedings of the German*

*Informatics Society's 3ʳᵈ International Conference on IT-Incidence Management and IT-Forensics,"* pp. 83-102, September 2007, Stuttgart, Germany.

30. **Gurbani, V.K.** Willis, D., and Audet, F., "Cryptographically Transparent Session Initiation Protocol (SIP) Proxies," *Proceedings of the IEEE International Conference on Communications (ICC),* pp. 1185-1190, June 2007, Glasgow, UK.

31. **Gurbani, V.K.**, Garvert, A., and Herbsleb, J., "A Case Study of Corporate Open Source Development Model," Proceedings of the *28ᵗʰ ACM International Conference of Software Engineering (ICSE 2006)*, pp. 472-481, May 2006, Beijing China.

32. Brusilovsky, A., **Gurbani, V.K.**, and Mizikovsky, S., "Network Protocol Extensions: Are They Bad?", 10ᵗʰ *IEEE/ITU-T Conference for Intelligence in Next Generation Networks (ICIN)*, May 2006, Bordeaux, France.

33. **Gurbani, V.K.**, Garvert, A., and Herbsleb, J., "A Case Study of Open Source Tools and Practices in a Commercial Setting," *Proceedings of the Fifth ACM Workshop on Open Source Software Engineering*, pp. 1-6, May 17, 2005, St. Louis,

34. **Gurbani, V.K.**, Sun, X.-H., and Brusilovsky, A., "Ubiquitous Services in the Next Generation Network: Constraining and Facilitating Forces," *Proceedings of the Eurescom 2005 Summit*, pp. 51-59, April 27-29, 2005, Heidelberg, Germany.

35. **Gurbani, V.K.**, Jagadeesan, L.J., and Mendiratta, V.B., "Characterizing Session Initiation Protocol (SIP) Network Performance and Reliability," *Proceedings of the ISAS 2005 (International Service Availability Symposium) Conference*, April 25-26, 2005, Berlin, Germany.

36. **Gurbani, V.K.**, and Sun, X.-H., "Extensions to an Internet signaling protocol to support telecommunication services," *Proceedings of the 2004 IEEE Global Telecommunications Conference (GLOBECOM)*, pp. 1640-1644, Nov.-Dec., 2004.

37. **Gurbani, V.K.**, and Sun, X-H., "Accessing Telephony Services from the Internet," *Proceedings of 2003 IEEE International Computer Communications and Networks Conference (ICCCN)*, pp. 517-523, October 2003.

38. **Gurbani, V.K.**, and Sun, X-H., "Services Spanning Heterogeneous Networks," *Proceedings of the 2003 IEEE International Conference on Communications (ICC)*, pp. 764-768, May 2003.

39. **Gurbani, V.K.**, Sun, X-H., Brusilovsky, A., Faynberg, I., Lu, H-L., and Unmehopa, M., "Internet Service Execution for Telephony Events," *Proceedings of the 2003 IEEE/ITU-T Conference for Intelligence in Next Generation Networks (ICIN)*, April 2003.

40. Brusilovsky, A., **Gurbani, V.K.**, Qutub, S., Tsioras, C., and Varney, D., "Programmable Selection of Radio Access Networks Utilizing Application Layer Protocols," *Proceedings of the 2003 IEEE/ITU-T Conference for Intelligence in Next Generation Networks (ICIN)*, April 2003.

41. **Gurbani, V.K.**, and Dickens, P.M., "Parallel Discrete Event Simulation for an Internet Telephony Call Signaling Protocol," *Proceedings of 2001 Summer Simulation Conference (SCS)*, July 2001.

42. **Gurbani, V.K.**, and Dickens, P.M., "Issues in Parallel Discrete Event Simulation for an Internet Telephony Call Signaling Protocol," *Proceedings of the 2000 Summer Simulation Conference (SCS)*, July 2000.

43. Brusilovsky, A., Buller, J., Conroy, L., **Gurbani, V.K.**, and Slutsman, L., "PSTN Internet Notification (PIN): proposed architecture, services and protocols," *Proceedings of the 2000 IEEE/ITU-T Conference on Intelligence in Networks (ICIN)*, January, 2000.

44. Petravick, D., Berman, E., **Gurbani, V.K.**, Nicinski, T., Pordes, R., Rechenmacher, R., Sergey, G., and Lupton, R., "Software Engineering Methods and Standards Used in the Sloan Digital Sky Survey (SDSS)," *Proceedings of the 4th Internation Workshop on Software Engineering and Artificial Intelligence for High Energy and Nuclear Physics*, April 1995.

45. Petravick, D., Berman, E., **Gurbani, V.K.**, Kent, S., Nicinski, T., Pordes, R., Rechenmacher, R., Sergey, G., Lupton, R., and Richmond, R., "The Sloan Digital Sky Survey's Use of the Web," *Proceedings of Weaving the Astronomy Web (WAW) Conference*, April 1995.

46. Kent, S.M., Stoughton, C., Newberg, H., Loveday, J., Petravick, D., **Gurbani, V.K.**,

Berman E. and Sergey, G., "Sloan Digital Sky Survey," In *Proceedings of Astronomical Data Analysis Software and Systems III, ASP Conference Series*, Volume 61, pp. 205-2014, 1994.

47. Berman, E., **Gurbani, V.K.**, MacKinnon, B., Newberg, H., Nicinski, T., Petravick, D., Pordes, R., Sergey, G., Stoughton, C., and Lupton, R., "The Distributed Development Environment for SDSS software," *Proceedings of 1994 Computing in High Energy Physics (CHEP)*, September 1994.

**Other Papers (invited, editorials, non-refereed, ad-hoc, etc.)**

1. **Gurbani, V.K.,** and Seedorf, J., "Evolution of the IETF Application Layer Traffic Optimization (ALTO) Protocol," In *IEEE Communications Standards Magazine*, pp. 9, June 2020.

2. Davids, C., **Gurbani, V.K.**, Loreto S. and Subramanyan, R., "Next Generation 911: Where Are We? What Have We Learned? What Lies Ahead?", In *IEEE Communications Magazine*, 55(1), pp. 130-131, January 2017.

3. Davids, C., **Gurbani, V.K.**, Ormazabal, G., Rollins, A., Singh, K. and State, R., "Research topics related to Real-Time Communications over 5G networks," In *ACM Computer Communications Review (CCR)*, July 2016. (Online http://ccracmsigcomm.info.ucl.ac.be/wp-content/uploads/2016/07/sigcomm-ccr-paper21.pdf)

4. Maisonneuve, J., Fossati, T. and **Gurbani, V.K.**, "The security pendulum and the network," In *Internet Architecture Board (IAB) Workshop in Managing Radio Networks in an Encrypted World (MaRNEW)*, September 2015. [Online: https://www.iab.org/wp-content/IAB-uploads/2015/08/MaRNEW_1_paper_4.pdf]

5. Mendiratta. V., **Gurbani, V.K.**, and Phadke, C., "Anomaly detection in mobile phone data --- Exploratory analysis using Self-Organizing Maps," MIT Media Lab NetMob Conference, April 2015.

6. **Gurbani, V.K.** and Ho, T.K., "Detecting anomalies in text-based protocols without parsing," In the *2nd Bell Labs Science Workshop*, December 6-7, 2011, Villarceaux, France.

7. Marocco, E., **Gurbani, V.K.**, Hilt, V., Rimac, I., and Tomsu, M., "Peer-to-Peer Infrastructure: A Survey of Research on the Application-Layer Traffic Optimization Problem and the Need for Layer Cooperation," *IETF Workshop on Peer-to-peer Infrastructure*, May 28, 2008, Massachusetts Institute of Technology, Cambridge, MA, USA.

8. **Gurbani, V.K.**, Garvert A., and Herbsleb, J.D., "Managing a Corporate Open Source Asset," unpublished manuscript presented at *ACM OOPSLA Workshop on Integration of Open Source Components into Large Software Systems*, October 2007, Montreal, Canada.

**Internet Engineering Task Force (IETF) RFCs**

1. Johansson, O., Salgueiro, G., **Gurbani, V.K.**, and Worley, D., "Locating Session Initiation Protocol (SIP) Servers in a Dual-Stack IP Network," IETF RFC 7984 (Proposed Standard), September 2016.

2. Davids, C., **Gurbani, V.K.**, and Poretsky, S., "Methodology for benchmarking Session Initiation Protocol (SIP) devices: Basic session setup and registration," IETF RFC 7502 (Informational), April 2015.

3. Davids, C., **Gurbani, V.K.,** and Poretsky, S., "Terminology for benchmarking Session Initiation Protocol (SIP) devices: Basic session setup and registration," IETF RFC 7503 (Informational), April 2015.

4. **Gurbani, V.K.**, Hilt, V. and Schulzrinne, H., "Session Initiation Protocol (SIP) overload control," IETF RFC 7339 (Proposed Standard), September 2014.

5. **Gurbani, V.K.**, Burger, E., Anjali, T., Abdelnur, H. and Festor, O., "The Common Log Format (CLF) for the Session Initiation Protocol (SIP): Framework and Information Model," IETF RFC 6872 (Proposed Standard), February 2013.

6. Salgueiro, G, **Gurbani, V.K.,** and Roach, A., "Format for the Session Initiation Protocol

(SIP) Common Log Format (CLF)," IETF RFC 6783 (Proposed Standard), February 2013.

7. Marocco, E., Fusco, A., Rimac, I. and **Gurbani, V.K.**, "Improving Peer Selection in Peer-to-Peer networks," IETF RFC 6821 (Informational), December 2012.

8. Camarillo, G., El Malki, K. and **Gurbani, V.K.**, "IPv6 transition in the Session Initiation Protocol (SIP)," IETF RFC 6157 (Proposed Standard), April 2011.

9. Rimac, I., Hilt, V., Tomsu, M., **Gurbani, V.K.,** and Marocco, E., "A survey on research on the application-layer traffic optimization (ALTO) problem," IETF RFC 6029 (Informational), October 2010.

10. **Gurbani, V.K.**, Carpenter, B. and Tate, B., "Essential corrections for IPv6 ABNF and URI comparison in RFC3261," IETF RFC 5954 (Proposed Standard), August 2010.

11. Lawrence, S. and **Gurbani, V.K.**, "Extended Key Usage (EKU) for Session Initiation Protocol (SIP)," IETF RFC 5924 (Experimental), June 2010.

12. **Gurbani, V.K.**, Mahy, R. and Tate, B., "Connection Reuse in the Session Initiation Protocol," IETF RFC  5923 (Proposed Standard), June 2010.

13. **Gurbani, V.K.**, Lawrence, S. and Jeffrey, A., "Domain Certificates in the Session Initiation Protocol (SIP)," IETF RFC 5922 (Proposed Standard), June 2010.

14. Jennings, C. and **Gurbani, V.K.**, "The Internet Assigned Number Authority (IANA) tel Uniform Resource Identifier (URI) Parameter Registry," IETF RFC 5341 (Proposed Standard), September 2008.

15. **Gurbani, V.K.**, Boulton, C., and Sparks, R., "Session Initiation Protocol (SIP) torture test messages for Internet Protocol version 6 (IPv6)," IETF RFC 5118 (Informational), February 2008.

16. **Gurbani, V.K.**, and Jennings, C., "Representing Trunk Groups in sip/tel Uniform Resource Identifiers (URIs)," IETF RFC 4904 (Proposed Standard), June 2007.

17. Schulzrinne, H., **Gurbani, V.K.**, Kyzivat, P., and Rosenberg, J., "RPID: Rich Presence Extensions to the Presence Information Data Format," IETF RFC 4480 (Proposed Standard), July 2006.

18. **Gurbani, V.K.**, Haerens, F., and Rastogi, V., "Interworking SIP and Intelligent Network (IN) Applications," IETF RFC 3976 (Informational), January 2005.

19. **Gurbani, V.K.**, (Ed.), Faynberg, I., Lu, H-L., Brusilovsky, A., Gato, J., and Unmehopa, M., "The SPIRITS (Services in PSTN requesting Internet Services) Protocol," IETF RFC 3910 (Proposed Standard), October 2004.

| PATENTS | **Issued (US patents only)** |
|---|---|

1. **Gurbani, V.K.**, Sharma, S., Grinshpun, E., and Faucher, D., "System and method for programmable native analytics in 5G mobile networks," *US Patent Number* 10,206,131.  Issued February 12, 2019.

2. Kolesnikov, V. and **Gurbani, V.K.**, "Efficient Key Management System and Method," *U.S. Patent Number 9,106,628*; Issued August 11, 2015.

3. Cook, D., **Gurbani, V.K..** and Wegdam, M., "Method and apparatus for generating one-time passwords," *U.S. Patent Number 8,954,745;* Issued February 10, 2015.

4. Cook, D., **Gurbani, V.K.,** and Reddington, T., "Methods For Selectively Capturing And Replicating One-Time Password Generator Functionality From Device To Device," *U.S. Patent Number 8,788,835*; Issued July 22, 2014.

5. **Gurbani, V.K.**, S. Sabnis, V. Hiering, L. Nieto, B. Kumar, A. Gokhale, R.B. Hull, R.P. Klemm, and G. Zhou, "Customer relationship management system with network contact center server configured to control automated web and voice dialogues," *U.S. Patent Number 8,024,401*; Issued September 20, 2011; Filed: June 3, 2002.

6. Brusilovsky, A., **Gurbani, V.K.**, Jain, A., Montgomery, W.A., "Instant Presence System for a Guaranteed Call Connection," *U.S. Patent Number 7,050,810*; Issued May 23rd, 2006; Filed: July 22nd, 2002.

7. **Gurbani, V.K.**, and Jain, A., "Telephone Caller Identification Log with Internet Access," *U.S. Patent Number 6,282,275*, Issued: August 28th, 2001; Filed: August 7th, 1998.

8. Brusilovsky, A., **Gurbani, V.K.**, Jain, A., and Varney, D., "PSTN-Internet Notification Services," *U.S. Patent Number 6,819,667*, Issued: November 16th, 2004; Filed: August

5th, 1999.

**Applications Filed**
1. **Vijay K. Gurbani**, David Fruin, Joe Smetana, and Nikhita Sharma, "Conversational Avatar for Smart Devices," US Patent Application 63/262,930, Filed Oct 22, 2021.
2. Jordan Hosier, **Vijay K. Gurbani**, Yu Zhou, Neil Milstead, and Nikhita Sharma, "System and method for disambiguation and error resolution in call transcripts," US Patent Application 1104-008290-US1, filed November 2020.
3. **Gurbani, V.K.**, Grinshpun, E., Faucher, D., Sharma, S., "Method and system for automatic selection of virtual network functions (VNF) in a communication network," US patent application file date October 23, 2017.
4. Mc Bride, A., Jagadeesan, L., Moser, M. and **Gurbani, V.K.**, "Machine Learning and Analytics-Driven Security Autonomics," U.S. Patent file date February 12, 2015.

**MEMBERSHIPS/ AFFILIATIONS**

Senior Member, Association of Computing Machinery (ACM)
Member, IEEE, and IEEE Computer Society
Member, Usenix

**PH.D. COMMITTEES/STUDENTS SUPERVISED**

Ph.D. Committee, Sean Rivera, University of Luxembourg, "Securing robots: An integrated approach for security challenges and monitoring for the Robotic Operating System (ROS)," 2020.
Ph.D. Committee, Jeremy Charlier, University of Luxembourg, "*From persistent homology to reinforcement learning with applications for retail banking,*" 2019.
Ph.D. Committee, Manxing Du, University of Luxembourg, "*Towards optimal real-time bidding strategies for display advertising,*" 2019.
Ph.D. Committee,Erik Falk, University of Luxembourg, 2017.
Ph.D. Committee, Samuel Marchal, University of Luxembourg, 2015.
Ph.D. Committee, David Goergen, University of Luxembourg, 2014.
Ph.D. Committee, Cynthia Wagner, University of Luxembourg, 2012.
Ph.D. Committee, Anil Mehta, Southern Illinois University, 2011.
Ph.D. Committee, José Soler, Technical University of Denmark, 2007.

**Students supervised and topics studied**
Sean Rivera (University of Luxembourg), *DNS* Security; Erick Falk (University of Luxembourg), *Extreme-scale data analytic* pipelines; Samuel Jero (Purdue University), *Network adaptation in 5G*; Samuel Marchal (University of Luxembourg), *Anomaly detection in telecommunication network protocols*; Eric Falk (University of Luxembourg), *Scalable architectures for 5G streaming analytics*; Anil Mehta (Southern Illinois University), *Anomaly detection in telecommunication network protocols*; Felix Richter (Duale Hochschule Baden-Württemberg), *Distributed hash tables and Content Addressable Networks (CAN)*; Xiaohua Xu (Illinois Institute of Technology), *Distributed hash tables and Content Addressable Networks (CAN)*; Michael Daniluk (Brooklyn Polytechnic), *Detecting phishing attempts in email*; Anurag Kabra (Illinois Institute of Technology), *AES and Secure Tokens*.

**PROFESSIONAL SERVICE**

**2022: General Co-Chair,**IEEE Communications, Quality, and Reliability Workshop (CQR). **TPC Member**, 21st IEEE International Conference on Machine Learning and Applications (ICMLA); 8th International Conference on Machine Learning, Optimization, and Data Science (LOD); IEEE International Conference on Big Data (IEEE BigData 2022).
**2021: TPC Member**, IEEE/IFIP Network Operations and Management Symposium (NOMS 2021); 20th IEEE International Conference on Machine Learning and Applications (**ICMLA** 2021); **General Chair**, 14th Principles, Systems and Applications of IP Telecommunications (**IPTComm** 2021); **TPC Co-Chair**, IEEE ComSoc International Communications Quality and Reliability Workshop (**CQR**); **Chair, Emerging Technologies Panel,** IEEE ComSoc International Communications Quality and Reliability Workshop (CQR); **TPC Member**, **ACM SIGCOMM** 2021 Workshop on Network-Application Integration

(NAI 2021); **TPC Member,** 7th International Conference on Machine Learning, Optimization, and Data Science (**LOD** 2021).

**2020: Chair, Emerging Technologies Panel,** IEEE ComSoc International Communications Quality and Reliability Workshop (CQR); **General co-chair,** IEEE International Conference on Principles, Systems, and Applications of IP Telecommunications (IPTComm); **TPC Member,** IEEE International Conference on Big Data (IEEE BigData); **TPC Member,** The 6th International Conference on machine Learning, Optimization & Data Science (LOD '20); **TPC Member,** IEEE/IFIP International Symposium on Integrated Network Management (IM 2021).

**2019: TPC Member**, The 5th International Conference on machine Learning, Optimization & Data Science (LOD '19); **TPC Member,** IEEE International Conference on Big Data (IEEE BigData 2019)

**Series Editor**, IEEE Communication Design and Implementation Series (with Salvatore Loreto and Ravi Subrahmanyan), 2014-2018.
**Editor**, IEEE Communications Special Issue on Next Generation 911 (with Salvatore Loreto, Ravi Subrahmanyan and Carol Davids). IEEE Communications Magazine, January 2017.
**Editor,** IEEE Communication Special Issue on Web-based Communication, (with Salvatore Loreto and Jorg Ott), April 2013.
**Editor** Journal of Communications Special Issue: IP Communication Services (with John Buford and Anand R. Prasad, Editors), Journal of Communications, 7(2), February 2012.
**Editorial Board Member,** Journal of ICT Standardization, River Publishers, ongoing. (http://riverpublishers.com/journal.php?j=JICTS)
**Steering Committee Member,** Principles, Systems and Applications of IP Telecommunications (IPTComm) Conference, ongoing. Technical sponsor ACM (2007-2015), IEEE (2016).
**General Conference Chair or co-chair:**
ACM Principles, Systems and Applications of IP Telecommunications (IPTComm) Conference, 2015; IEEE Principles, Systems and Applications of IP Telecommunications (IPTComm) Conference 2016.
**Technical Program Committee Co-Chair:**
Conference co-chair, 8th ACM International Conference on Principles, Systems and Applications of IP Telecommunications (IPTComm 2015), October 2015.
4th ACM International Conference on Principles, Systems and Applications of IP Telecommunications (IPTComm 2010), August 2010.
IEEE 3rd International Conference on Internet Multimedia Systems Architecture and Applications (IMSAA 2009), December 2009.

**Technical Program Committee member:**

**2018:** IEEE International Conference on Big Data, IEEE Infocom Workshop on Resource Slicing for Future Clouds and Networks (RS-FCN); IEEE NetSoft Workshop in Softwarized Networks Analytics (SOFTNETICS); IFIP/IEEE International Symposium on Integrated Management (IM)
**2017:** IEEE International Conference on Communications (ICC), IEEE International Conference on Big Data (IEEE BigData) **2016:** IEEE International Conference on Communications (ICC)
**2015:** IEEE International Conference on Communications (ICC), IEEE International Conference on Cloud Computing (CLOUD)
**2014:** IEEE Global Communications Conference (Globecom), IEEE International Conference on Big Data (IEEE BigData)
**2013:** 7th International Conference on IT Security Incident Management and IT Forensics, IEEE International Conference on Big Data, IEEE 6th International Conference on Cloud

Computing (CLOUD), IEEE Globecom Communication Software, Services, and Multimedia Applications symposium, **:** IEEE International Conference on Communications (ICC)

**2012:** IEEE 5th International Conference on Cloud Computing (CLOUD 2012), IEEE Globecom Communication Software, Services, and Multimedia Applications symposium

**2011:** 6th International Conference on IT Security Incident Management and IT Forensics (IMF 2011), 4th International IEEE Conference on Cloud Computing (IEEE Cloud 2011), IEEE Globecom Communication Software, Services and Multimedia Applications Symposium, 5th ACM Conference on the Principles, Systems and Applications of IP Telecommunications ( IPTComm 2011), IEEE International Conference on Communications (ICC 2012).

**2010:** IEEE International Conference on Communications (ICC), IEEE Global Communications Conference (Globecom).

**2009:** IEEE International Conference on Web Services (ICWS), 5th International Conference on IT Security Incident Management and IT Forensics (IMF).

**2008:** Principles, Systems and Applications of IP Telecommunications (IPTComm), IEEE International Conference on Web Services (ICWS), IEEE/German Informatics Society International Conference on IT-Incident Management and IT-Forensics (IMF), ACM OOPSLA Educator's Symposium.

**2007:** IEEE International Conference on Information Technology (CIT), IEEE International Conferences on Web Services (ICWS).

**2006:** IEEE International Conferences on Web Services (ICWS), IEEE International Conference on Information Technology (CIT).

**Technical Reviewer (Journals):**
  IEEE Network
  IEEE Transactions on Mobile Computing
  ACM Computing Reviews
  Bell Labs Technical Journal
  Software: Practice and Experience,
  IEEE Transactions on Network and Service Management
  IEEE Communications Magazine

**Technical Reviewer (Conferences):**
  IEEE International Conference on Communications (ICC), 2008
  IEEE International Conference on Communications (ICC), 2007
  IEEE/ACM Cluster Computing and the Grid (CCGrid) 2005
  IEEE International Conference on High Performance Computing (HiPC) 2005
  IEEE/ACM International Parallel and Distributed Processing Symposium (IPDPS), 2004
  IEEE International Conference on High Performance Computing (HiPC) 2003

**Internet Engineering Task Force (IETF):**
  IETF ALTO Working Group co-chair, 2009-Present
   (http://www.ietf.org/dyn/wg/charter/alto-charter.html)
  IETF Call-Control UUI Service for SIP Working Group co-chair, 2009-Present
   (http://www.ietf.org/dyn/wg/charter/cuss-charter.html)
  IETF NomCom Voting Member, 2005-2006
  IETF Gen-Art reviewer
  IETF Application Area Review Team

**SELECTED INVITED TALKS**

1. *Vāc: Can a Text-to-Speech Engine Generate Human Sentiments?,* Invited seminar, Picariello Lectures in Data Science, Università degli Studi di Napoli Federico Iii, Naples, Italy. Feb 28, 2022.
2. *When DNS goes dark: Understanding privacy and shaping policy of an evolving protocol*, Invited talk at the 2021 **DDI User Group**, Germany, June 17, 2021.
3. *When DNS goes dark: Understanding privacy and shaping policy of an evolving protocol*, Invited talk at the 2021 **NDSS DNS Workshop**, February 21, 2021.

4. *The complexity of communications,* Invited talk to the University of Illinois 15th CSL conference, February 26, 2020.
5. *Challenges in building learning models from encrypted traffic,* Invited talk at the **European Union Project MAMI Management and Measurement Summit (MS3)**, London, UK, March 16, 2018.
6. *The Session Initiation Protocol (SIP) Stack: A look under the hood of* VoIP, Invited presentation to **UniForm Chicago** (http://www.uniformchicago.org), Chicago, Illinois, Feb 22, 2018.
7. *Mitigating mimicry attacks against communications networks*, Invited seminar to the **Chicago chapter of American Statistical Association** (ASA), Chicago, Illinois, January 9, 2018.
8. *Probabilistic models and scalable analytical architectures in real-time communications data science*, Invited seminar at the Department of Computer Science, **Northern Illinois University**, DeKalb, IL, October 12, 2017.
9. *Inner Source: Musings of an accidental revolutionary*, Invited keynote at the **InnerSource Commons Fall Summit**, Naperville, IL, September 28, 2017.
10. *The Inner Source Revolution: How corporations create commercial software using open source methodologies*, Invited talk to **UniForum Chicago**, Monday June 19, 2017.
11. *Mitigating mimicry attacks against the Session Initiation Protocol*, Center for Digital Media invited colloquium at **DePaul University**, Chicago, Illinois, May 5, 2017.
12. *Love all, trust few...On trusting intermediaries in HTTP*, Invited seminar at the SEDAN Research Group, **University of Luxembourg**, Luxembourg, November 15, 2016.
13. *Mitigating mimicry attacks against the Session Initiation Protocol (SIP)*, Invited lecture to Coordinated Science Lab (CSL) Spotlight Lecture Series at **University of Illinois**, Urbana-Champaign, Illinois, October 21, 2016.
14. *Big Data and Analytics in 5G: Challenges,* Invited informal talk to Coordinated Science Lab (CSL) Social Hour at **University of Illinois**, Urbana-Champaign, Illinois, October 21, 2016.
15. *Dynamic control of Real-Time Communications (RTC) using SDN: A case study of a 5G end-to-end service*, Invited talk to Workshop on Science of Security of SDNs (SoSSDN), sponsored by **Universilty of Illinois at Urbana- Champaign** and **Illinois Institiue of Technology**, Chicago, Illinois, June 16, 2016.
16. *The Inner Source Revolution: How corporations create commercial software using open source methodologies*, Invited talk to the Flourish 2016 Open Source conference at the **University of Illinois at Chicago**, April 2, 2016
17. *Mitigating mimicry attacks against the Session Initiation Protocol (SIP)*, Invited talk at Department of Mathematics, **Northern Illinois University**, DeKalb, Illinois, February 5, 2016.
18. *Corporate open source*, Invited talk to Inner Source workshop, **The National University of Ireland**, Galway, February 19, 2015.
19. *Corporate Open Source*, Loyola University Chicago Computer Science Seminar, co-sponsored by Chicago ACM chapter, **Loyola University**, Chicago, Illinois, Wednesday, April 9 2014.
20. *The role of standards in innovation*, Invited talk at **Southern Illinois University**, Carbondale, Illinois, March 28, 2014.
21. *Protecting against mimicry attacks*, Bell Labs DARPA Day presentation to **DARPA**, Arlington, VA, May 7, 2013.
22. *On the inefficacy of Euclidean distance classifiers for detecting self-similar Session Initiation Protocol (SIP) messages*, invited presentation at **National University of Ireland** - Maynooth, Maynooth, Ireland, May 25, 2011.
23. *A case study of a corporate open source development model*, invited talk to the Department of Computer Science, **Bradley University**, November 17, 2010, Peoria, Illinois.

24. *Resource localization in peer-to-peer networks*, invited talk to the 5th annual **Southern Illinois University** Innovative Systems (SIUIS 5) conference, November 4-6, 2010, Carbondale, Illinois.
25. *Anomalous message detection in the Session Initiation Protocol (SIP)*, invited talk to the 6th annual VoIP Conference and Expo, **Illinois Institute of Technology**, October 15, 2010, Chicago, Illinois.
26. *Swarm Analysis: 7 days of two popular swarms*, Invited talk at the Interdiscplinary Center for Security, Reliability and Trust at the **University of Luxembourg**, Luxembourg City, Luxembourg. Monday, May 10, 2010.
27. *Swarm analysis: 7 days of 2 popular swarms*, Invited talk at the 4th Annual IEEE **Southern Illinois University** Intelligent Systems (SIUIS) Conference, Carbondale, Illinois, October 31, 2009.
28. *The Session Initiation Protocol (SIP) Common Log Format (CLF)*, Invited talk at the 5th Annual VoIP Conference and Exposition, **Illinois Institute of Technology**, October 28, 2009.
29. *A Case Study of a Corporate Open Source Development Model*, October 26, 2008. Invited talk to 3rd Annual IEEE **Southern Illinois University** Intelligent Systems Conference (SIUS), Department of Electrical and Computer Engineering, Southern Illinois University Carbondale, Illinois.
30. *Peer-to-peer Infrastructure: The Application-layer Traffic Optimization (ALTO) Problem,* October 25, 2008. Invited talk to 3rd Annual IEEE **Southern Illinois University** Intelligent Systems Conference (SIUS), Department of Electrical and Computer Engineering, Southern Illinois University Carbondale, Illinois.
31. *Peer-to-peer Infrastructure: The Application-layer Traffic Optimization (ALTO) Problem*, October 23, 2008. Invited talk to 4th Annual IIT VoIP Conference, **Illinois Institute of Technology**, Chicago, Illinois.
32. *Phishwish: A stateless phishing filter using minimal rules*, March 26th, 2008. Invited talk, **Illinois Institute of Technology** 6th Annual NetSecure conference.
33. *A Case Study on Constructing a Security Event Management (SEM) System*, February 11, 2008. Invited talk, **Illinois Institute of Technology** VoIP Roundtable.
34. *A Case Study on Constructing a Security Event Management (SEM) System*, Invited talk, October 26, 2007. 3rd Annual VoIP Conference at **Illinois Institute of Technology**, Chicago, Illinois.
35. *Security Methodology: The Bell Labs Security Framework*, April 24th, 2007. Invited talk, Alcatel-Lucent and **University of Stuttgart** collaboration, Stuttgart, Germany.
36. *Voice Over IP (VoIP) Security and the Internet Multimedia Subsystem (IMS) Architecture,* Invited talk, May 17 2006, 2nd Annual Managing VoIP Security Conference, **Illinois Institute of Technology**, Chicago, Illinois
37. *The Session Initiation Protocol (SIP) and Security*, February 20th, 2006. Invited talk to **Illinois Institute of Technology**, Center for Professional Development, Wheaton Illinois.
38. *Web Services in a Telecommunications Context* , October 27th, 2005. Invited talk at the 2005 VoIP Conference and Expo, **Illinois Institute of Technology**, Chicago, Illinois.
39. *From Telecommunication Services to Computing Services: Can We Get There?*, October 20th, 2005. Invited talk at **North Central College**, Naperville, Illinois.

**REFERENCES**

Available upon request.

(last update: Tuesday, September 13, 2022)