

BIOGRAPHICAL SKETCH

SUDHIR AGGARWAL

CONTACT

Department of Computer Science, Florida State University, Tallahassee, FL 32306-4530

PROFESSIONAL PREPARATION

Stanford University	Mathematics	B.S.
University of Michigan	Mathematics	M.S.
University of Michigan	Computer & Comm. Sciences	M.S.
University of Michigan	Computer & Comm. Sciences	Ph.D.

SELECTED APPOINTMENTS

Aug. 2002 – present	Professor, Dept. of Computer Science, Florida State University
Aug. 2002 – Aug. 2005	Chair, Dept. of Computer Science, Florida State University
June 1999 – Aug. 2002	Director / (CTO, iCDD), Bell Laboratories / Lucent Technologies
Aug. 1990 – June 1999	Professor & Chair, Dept. of Computer Science, SUNY Binghamton
June 1993 – June 1998	Director, Center for Computing Technologies, SUNY Binghamton
June 1989 – Apr. 1990	VP for Software, Information Machines (startup)
June 1987 – June 1989	District Manager, Dist. Sys. Soft. Res., Bell Communications Research
Mar. 1982 – June 1987	MTS, Mathematical Sciences Research Center, AT&T Bell Laboratories
Sep. 1977 – Mar. 1982	Assist. & Assoc. Prof., Dept. of Math., Univ. of California, Riverside

SELECTED PUBLICATIONS

1. Gokila Dorai, Sudhir Aggarwal, Neet Patel, Charisa Powell, VIDE - Vault App Identification and Extraction System for iOS Devices, *Forensic Science International: Digital Investigation*, Volume 33, Supplement, 2020, 301007, ISSN 2666-2817.
2. Gokila Dorai, Shiva Houshmand, Sudhir Aggarwal, (2020), "Data Extraction and Forensic Analysis for Smartphone Paired Wearables and IoT Devices," Proceeding of the 53rd Hawaii International Conference on System Sciences (HICSS), pp. 1401-1409.
3. S. Aggarwal, G. Dorai, U. Karabiyik, T. Mukherjee, N. Guerra, M. Hernandez, J. Parsons, K. Rathi, H. Chi, T. Aderibigbe, R. Wilson, "Design and Implementation of a Targeted Data Extraction System for Mobile Devices," Proceedings 15th IFIP WG11.9 Int. Conf. on Digital Forensics, Jan 2019.
4. Aggarwal S., Houshmand S., Weir M. (2018) "New Technologies in Password Cracking Techniques." In: *Lehto M., Neittaanmäki P. (eds) Cyber Security: Power and Technology. Intelligent Systems, Control and Automation: Science and Engineering*, vol 93. Springer, Cham.
5. Houshmand S., Aggarwal S. (2017) "Using Personal Information in Targeted Grammar-Based Probabilistic Password Attacks." In: *Peterson G., Sheno S. (eds) Advances in Digital Forensics XIII*. IFIP Advances in Information and Communication Technology, Vol. 511. Springer, Cham.
6. Karabiyik, Umit, and Sudhir Aggarwal. "Model of hierarchical disk investigation." In *2016 4th International Symposium on Digital Forensic and Security (ISDFS)*, pp. 84-88. IEEE, 2016.
7. Umit Karabiyik and Sudhir Aggarwal, "Advanced Automated Disk Investigation Toolkit," *Advances in Digital Forensics XII*, G. Peterson and S. Sheno S. (eds.), Springer International Publishing, 2016, 379-396.

8. Shiva Houshmand, Sudhir Aggarwal, Umit Karabiyik, "Identifying Passwords Stored on Disk," *Advances in Digital Forensics XI*, G. Peterson and S. Shenoj (eds.), Springer International Publishing, 2015, 195-213.
9. Houshmand, S.; Aggarwal, S.; Flood, R., "Next Gen PCFG Password Cracking," *Information Forensics and Security, IEEE Transactions on*, vol.10, no.8, pp.1776-1791, Aug. 2015.
10. Umit Karabiyik and Sudhir Aggarwal, "AUDIT: Automated Disk Investigation Toolkit," *Journal of Digital Forensics, Security and Law*, Vol. 9-2, 2014, pp. 129-144.
11. Shiva Houshmand and Sudhir Aggarwal, "Building Better Passwords using Probabilistic Techniques," *Proceedings of the 28th Annual Computer Security Applications Conference (ACSAC '12)*, December 2012, pp. 109-118.
12. Matt Weir, Sudhir Aggarwal, Michael Collins, Henry Stern, "Testing Metrics for Password Creation Policies by Attacking Large Sets of Revealed Passwords," *Proceedings of CCS'10*, October 4-8, 2010, pp. 163-175.
13. Sudhir Aggarwal, Zhenhai Duan, Faye Jones and Wayne Liu, "Trust-Based Internet Accountability: Requirements and Legal Ramifications," *Journal of Internet Law*, Vol. 13-10, April 2010, pp. 3-15.
14. Wayne Liu, Sudhir Aggarwal and Zhenhai Duan, "Incorporating Accountability into Internet Email," *Journal of Digital Forensic Practice*, Vol. 2-4 (2009), pp. 209-220.
15. Matt Weir, Sudhir Aggarwal, Breno de Medeiros, Bill Glodek, "Password Cracking Using Probabilistic Context Free Grammars," *2009 IEEE Symposium on Security and Privacy*, May 2009, pp. 391-405.
16. Sudhir Aggarwal, Jasbinder Bali, Zhenhai Duan, Leo Kermes, Wayne Liu, Shashank Sahai, and Zhenghui Zhu, "The Design and Development of an Undercover Multipurpose Anti-Spoofing Kit (UnMask)," *Proceedings of the 23rd Computer Security Applications Conference (ACSAC)*, December 2007, pp. 141-150.
17. Sudhir Aggarwal, Daniel Beech, Rajarshi Das, Breno de Medeiros, Eric Thompson, "X-Online: An Online Interface for Digital Decryption Tools," *Proceedings of the 2nd Int. Workshop on Systematic Approaches to Digital Forensics Engineering (SADFE 2007)*, April 2007, pp. 105-116.
18. Sudhir Aggarwal, Justin Christofoli, Sarit Mukherjee and Sampath Rangarajan, "Authority Assignment in Distributed Multi-Player Proxy-based Games," *Proceedings of the 5th Workshop on Network & System Support for Games 2006*, October, 2006.
19. Sudhir Aggarwal, Michael Burmester, Peter Henry, Leo Kermes, Judie Muholland, "Anti-Cyberstalking: The Predator and Prey Alert (PAPA) System," *Proceedings of the 1st Int. Workshop on Systematic Approaches to Digital Forensics Engineering (SADFE 2005)*, November 2005, pp. 195-205.
20. Sudhir Aggarwal, Hemant Banavar, Sarit Mukherjee and Sampath Rangarajan, "Fairness in Dead-Reckoning Based Distributed Multi-Player Games," *ACM SIGCOMM 2005 Workshop on NetGames*, October 2005, (on-line proceedings).
21. Sudhir Aggarwal, Madhura Limaye, Arun Netravali, and Krishan Sabnani, "Constrained Diameter Steiner Trees for Multicast Conferences in Overlay Networks," *Proceedings of the 1st Int. Conf. on Quality of Service in Heterogeneous Wired/Wireless Networks, (QShine 2004)*, October 2004, pp. 262-271.
22. Sudhir Aggarwal, Hemant Banavar, Amit Khandelwal, Sarit Mukherjee and Sampath Rangarajan, "Accuracy in Dead-Reckoning Based Distributed Multi-Player Games," *ACM SIGCOMM 2004 Workshop on NetGames*, August 2004, pp. 161-165.
23. Sandeep Mitra and Sudhir Aggarwal, "Infrastructure for the Synchronization and Coordination of Concurrent Java Component Programs," *Proceedings of the 33rd Hawaii International Conference on System Sciences (HICSS 33)*, January 2000, cd-rom.

24. S. Aggarwal, S. Paul, D. Massey and D. Calderaru, "A Flexible Multicast Routing Protocol for Group Communication," *Computer Networks, Volume 32, Issue 1*, January 2000, pp. 35-60
25. K. Ghose, S. Aggarwal, A. Ghosh, D. Goldman, P. Sulatycke, P. Vasek, and D. Vogel "Designing Multiprocessor/Distributed Real-Time Systems Using the ASSERTS Toolkit," *Euro-Par Conference (in Lecture Notes in Computer Science, Vol.1685)*, August 1999, pp. 505-510.
26. Sudhir Aggarwal, Fuyung Hung and Weiyi Meng, "WIRE - A WWW-based Information Retrieval and Extraction System," *Proceedings of the 9th Int. Workshop. on Database and Expert Systems Applications (DEXA98)*, August 1998, pp. 887-892.
27. K. Ghose, S. Aggarwal, P. Vasek, S. Chandra, A. Raghav, A. Ghosh, and D. Vogel, "ASSERTS: A Toolkit for Real-time Software Design, Development and Evaluation," *9th EuroMicro Workshop on Real-Time Systems*, June 1997, pp. 224-232.
28. Beth Schroeder, Karsten Schwan and Sudhir Aggarwal, "Software Approach to Hazard Detection Using On-line Analysis of Safety Constraints," *Proceedings of the 16th Symposium on Reliable Distributed Systems*, Oct. 1997, pp. 80-87.
29. Sudhir Aggarwal and Sanjoy Paul, "A Flexible Protocol Architecture for Multi-party Conferencing," *Fifth Int. Conf. on Computer Communication Networks*, Oct. 1996, pp. 81-91.
30. Barry Kelly and Sudhir Aggarwal, "A Framework for a Fidelity Based Agent Architecture for Distributed Interactive Simulation," *Proceedings of the 14th Workshop on Standards for Distributed Interactive Simulation*, March 1996, pp. 541-546.
31. Sudhir Aggarwal and Amritansh Raghav, "Dualcast: A Scheme for Reliable Multicasting," *Proceeding of the 1994 Int. Conf. on Network Protocols*, Oct. 1994, pp. 15-22.
32. Sudhir Aggarwal and Chakib Chraïbi "On the Scheduling of Hyperperiodic Tasks," *Proceedings of the 5th EuroMicro Workshop on Real-Time Systems*, June 1993, pp. 112-117.
33. Sudhir Aggarwal and Patricia Obenour, "Specifying a Switching System using IC*" *Proceedings of IEEE INFOCOM '90*, August 1990.
34. S. Aggarwal, C. Courcoubetis and P. Wolper, "Adding Liveness Properties to Coupled Finite State Machines," *ACM Trans. on Programming Languages and Systems, Vol. 12-2*, April 1990, pp. 303-339.
35. S. Aggarwal, D. Barbara, W. Cunto, and M.R. Garey, "The Complexity of Collapsing Reachability Graphs," in *Lecture Notes in Computer Science, J. Sifakis (ed), Proceedings of the Workshop on Automatic Verification Methods for Finite State Systems*, Grenoble, France, 1989, pp. 269-274.
36. Sudhir Aggarwal and Zvi Har'El, "Simulation Analysis of Protocols in an Integrated Software Environment," *Computer Networks & ISDN Systems, Vol. 16-3*, January 1989, pp. 197-215.
37. S. Aggarwal, D. Barbara and K.Z. Meth, "A Software Environment for the Specification and Analysis of Problems of Coordination and Concurrency," *IEEE Trans. on Software Engineering, Vol. 14-3*, March, 1988, pp. 280-290.
38. S. Aggarwal, D. Barbara and K.Z. Meth, "SPANNER: A Tool for the Specification, Analysis, and Evaluation of Protocols," *IEEE Trans. on Software Engineering, Vol. 13-12*, December, 1987, pp. 1218-1237.
39. Sudhir Aggarwal and Robert P. Kurshan, "Modeling Elapsed Time in Protocol Specification," in *Protocol Specification, Testing and Verification III*, ed. H. Rudin and C.H. West, North-Holland, 1983.
40. S. Aggarwal, R.P. Kurshan and K.K. Sabnani, "A Calculus for Protocol Specification and Validation," in *Protocol Specification, Testing and Verification III*, eds. H. Rudin and C.H. West, North-Holland, 1983.
41. Sudhir Aggarwal, "Deterministic Representation of Probabilistic Systems by Ergodic Machines," *Mathematical Systems Theory 10-4*, 1977.

SELECTED SYNERGISTIC ACTIVITIES

- **External Grant Funding since joining FSU in 2002 as Department Chair:**
 - *Research Grants as PI: 3 Million+*
 - *Research Grants as Co-PI: 2 Million (709K to FSU)*
 - *Scholarship for Services Grant as Co-PI: 1.85 Million*
- Directing the Electronic Crime Investigative Technologies (ECIT) Laboratory, (2007 – present), a research group in the Computer Science Department at FSU. ECIT has worked with the Florida Department of Law Enforcement and the National White Collar Crime Center in the areas of cybersecurity, cybercrime and digital forensics.
- Invited to teach a short course on “Password Cracking” at the 25th Jyväskylä Summer School, University of Jyväskylä, Finland (August 2015).
- Recent Invited Talks
 - *TDES*, Techno Security Digital Forensics Conference, Myrtle Beach, (June 2019)
 - *Modern Password Cracking Systems (workshop)*, DFRWS USA 2017 (August 2017)
 - *Password Cracking (short course)*, University of Jyväskylä, Finland (August 2015)
 - Invited speaker at *the Centre for Strategic Infocomm Technologies*, Govt. of Singapore, (November 2014).
 - Invited speaker at *the NW3C State of the States Cybercrime Consortium*, Potomac Maryland, (May 2012).
 - Gave several invited presentations on *Password Cracking and Cybersecurity* at Superlec - Rennes, France, April 18, 2011.
 - Invited speaker at the *ARO Workshop on Digital Forensics*, Washington DC (2009).
- ECIT conducted validation testing of a Microsoft product called Cofee (Computer Online Forensic Evidence Extractor) through a request from NW3C and Microsoft (2009)
- As chief technology officer (2000 –2002) of the internet content delivery and distribution (iCDD) business unit of Lucent Technologies, I was responsible for the architecture, portfolio, and design and development of the Imminet™ product line including intelligent 4/7 switches and caches (static, streaming, secure).
- General Co-chair of the *1998 International Conference on Network Protocols*, (1998).
- General and Program Co-chair for the *IFIP Eighth International Symposium on Protocol Specification, Testing and Verification*, (1988).
- At Bell Laboratories, designed and developed software tools for the specification and analysis of protocols. A prototype system (SPANNER) was used for research and led to the development of a commercial system.

BOOKS, SPECIAL ISSUES & MISCELLANEOUS

- Matt Weir and Sudhir Aggarwal, “Cracking 400,000 passwords, or how to explain to your roommate why the power bill is so high,” Presentation at *DEFCON 17*, Las Vegas, Nevada, July 31 – August 2, 2009. (on conference cd-rom)
- Matt Weir and Sudhir Aggarwal, “Password cracking on a budget,” Presentation at *DEFCON 16*, Las Vegas, Nevada, August 8-10, 2008. (on conference cd-rom)
- Sudhir Aggarwal and Krishan Sabnani, (eds.) "Special Issue on OSI Protocols," *Computer Networks and ISDN Systems*, March, 1990.
- Sudhir Aggarwal and Krishan Sabnani, (eds.) *Protocol Specification, Testing, and Verification VIII*, North-Holland, 1988.
- Sudhir Aggarwal and Bhaskarpillai Gopinath, (eds.) "Special Issue on Tools for Computer Communication Systems," *IEEE Transactions on Software Engineering Vol 14-3*, March, 1988.