STEPHEN R. TATE

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Areas of expertise: Computer Security and Cryptography, Software Security, Algorithm Analysis, On-Line Algorithms, Algebraic Algorithms, Data Compression, Computer Science Education

EDUCATION

Year	Degree	Major	Institution
1991	Ph.D.	Computer Science	Duke University
1986	B.E.	Computer Science/Electrical Eng./Mathematics	Vanderbilt University

PROFESSIONAL EXPERIENCE

Dates	Position	Organization	Location
Aug 2007 – Aug 2025	Professor	UNC Greensboro	Greensboro, NC
Aug 2023 – July 2024	Interim Head (Math/Stats)	UNC Greensboro	Greensboro, NC
Aug 2007 – Jul 2019	Department Head (CS)	UNC Greensboro	Greensboro, NC
Aug 1999 – Jul 2007	Associate Professor	University of North Texas	Denton, TX
Aug 1993 – Jul 1999	Assistant Professor	University of North Texas	Denton, TX
Aug 1991 – Jul 1993	Asst. Research Professor	Duke University	Durham, NC
Jan 1991 – Aug 1991	Research Associate	Duke University	Durham, NC
Sep 1987 – Dec 1990	Research Assistant	Duke University	Durham, NC

SELECTED PROFESSIONAL ACCOMPLISHMENTS

- Founding Department Head for the Department of Computer Science at UNC Greensboro (September 2007 – July 2019), formed after existing computer science programs split from the former Department of Mathematical Sciences. Oversaw massive program growth, from approximately 145 students to 540 students, and substantial research productivity and funding gains. Hired five new tenure-track faculty, twelve full-time non-tenure-track instructors, three administrative staff, and multiple part-time adjunct instructors. Oversaw curriculum efforts such as the addition of Data Science and Big Data concentrations at both the undergraduate and graduate levels. Created and obtained state approval for a new Computer Science Ph.D. program, enrolling the first student cohort in Fall 2022.
- Founder and Director of the Center for Information and Computer Security (CICS) at UNT (founded in 2003 and directed until 2007). Designated by the NSA and DHS as a "National Center for Academic Excellence in Information Assurance Education" in 2004.
- Solid history of peer-reviewed publications in a variety of areas, including security, cryptography, algorithms, and data compression, garnering over 1600 citations (h-index 19) and with work included in Knuth's *Art of Computer Programming (Volume II)*.

- Selected conference organization activities:
  - Program Chair, *10th IEEE International Conference on Trust, Security, and Privacy in Computing and Communications (TrustCom)*, Nov 2011.
  - Vice Program Chair, *2008 International Conference on Autonomic and Trusted Computing*.
  - Chair, *IEEE Symposium on Security and Privacy*, May 2005.
  - Vice-chair, *IEEE Symposium on Security and Privacy*, May 2004.
  - Co-chair, *Symposium on the Theory of Computing* (STOC), jointly with Wolfgang Bein of UTD, held May 1998 in Dallas, TX.
  - Founder and organizer of the *South Central Information Security Symposium (SCISS '03)*, held at UNT in April 2003 (also a key organizer in the SCISS '04 in Houston, and SCISS '05 in Austin).
  - Co-organizer of the *Workshop on Data and Image Compression Needs and Uses in the Scientific Community*, held Dec. 1992 in Greenbelt, MD (organized with Jim Tilton of NASA).

GRANTS, CONTRACTS, AND OTHER FUNDING (only funded proposals listed – travel awards excluded)

- Jun 2019 – Jul 2019, *Characterizing Reasoning about Software Vulnerabilities*, Faculty First Award, UNC Greensboro, $5,000.
- June 2018, Equipment donation from private company in Maryland, estimated value: $4,800.
- May 2017 – Dec 2017, *Course-based Undergraduate Research Experiences (CURE) development Grant*, UNCG Undergraduate Research, Scholarship, and Creativity Office, $2,000 (with co-PI Hamid Nemati).
- Sep 2013 – Aug 2015, *Innovative Active Learning Using Tablets*, National Science Foundation, $300,000 (total budget — UNCG portion is $48,000); co-PI, with PI Lixin Fu and project PI Barry Kurtz (Appalachian State University).
- 2013, *STARS Chapter Support*, donation from Greensboro Jaycees, $2,000.
- Sep 2011 – Aug 2013, *STARS Leadership Corps at UNCG*, $30,000 plus travel funding, sub-award from an NSF-supported "Broadening Participation in Computing" project at UNC Charlotte; with UNCG co-PIs Lakshmi Iyer and Anthony Chow.
- 2011, *STARS Chapter Support*, donation from Greensboro Jaycees, $2,000.
- Sep 2009 – Aug 2014, *Layered Modeling for Design, Analysis, and Implementation of Trusted Platform Applications*, National Science Foundation, $498,090.
- Sep 2006 – Aug 2008, *Collaborative Research: A Regional Partnership to Build and Strengthen IA in North Texas*, National Science Foundation, $247,183 (total budget — UNT portion is $128,106); Principal Investigator; with co-PIs Ram Dantu and Matt Wright (University of Texas at Arlington).

- July 2005 – June 2007, *Recruiting and Retention Strategies for Computer Science at UNT*, Texas Higher Education Coordinating Board, Texas Technology Workforce Development Grant, $125,322 (Investigator; with PIs Robert Akl and David Keathly, and other Investigators Krishna Kavi, Kathleen Swigger, and Philip Sweany).
- Aug 2002 – July 2006, *Mobile Agent Security Through Multi-Agent Protocols*, National Science Foundation, $249,222 (plus $3,840 supplement for SCISS '03 support).
- June 2002, Equipment donation from Intrusion.com, estimated value: $6,000.
- Dec 2001, UNT Faculty Research Grant to support establishment of the *Computer Privacy and Security (CoPS) Lab*, $3,400.
- Jan 1998 – Aug 2000, *Exploiting Coordinate Representation in Non-uniform Spatial Decomposition*, Texas Advanced Research Program, $91,076.
- July 1994 – July 1998, *On-Line and Dynamic Algorithms: Computing with an Uncertain Future*, National Science Foundation, $67,544.
- June 1994 – Aug 1994, *A Proposal for Research on Molecular Dynamics Algorithms*, UNT Junior Faculty Summer Research Fellowship, $3,500.

CONSULTING AND OTHER PAID PROFESSIONAL ACTIVITIES

- Louisiana Board of Regents Departmental Enhancement proposal review panel chair (two review cycles: 2018–2019 and 2020–2021)
- Siemens Science Competition, Computer Science Judge, Silver Spring, MD (2015)
- Consultant, NC State University and Miami University of Ohio, NSF-funded CPATH project (education research), evaluating technical writing samples (2014)
- Siemens Science Competition, Computer Science Judge, Princeton, NJ (2014)
- Consultant, Department Review, Department of Computer Science, Bowling Green State University (2010)
- Consultant, Department Review, Department of Computer Science, University of Arkansas at Pine Bluff (2006–2007)
- Expert Witness, intellectual property case involving data compression technology. Worked through the Silicon Valley Expert Witness Group. (2002)

HONORS AND AWARDS

- Ph.D. student Ke Xu received the "Best Dissertation Award" in the UNT College of Engineering, 2005.
- Recognized at UNT Board of Regents Luncheon (February 2004) for federal certifications (CNSS 4011 and 4013) for computer security course sequence.

- Created computer security program which won recognition from the National Security Agency (NSA) and the Department of Homeland Security (DHS) for UNT as a "Center of Academic Excellence in Information Assurance Education."
- Received the "National Security Award" at the Fall 2004 Faculty Convocation — included receiving a certificate of recognition from Texas Governor Rick Perry.

PUBLICATIONS

Refereed Journal Papers:

1. S.R. Tate and B. Yuan. "On the Efficiency of Building Large Collections of Software: Modeling, Algorithms, and Experimental Results," in *Communications in Computer and Information Science*, vol 1859, pp. 145–168, July 2023.
2. F. Wei, M. Rankumar, S. R. Tate, and S. D. Mohanty. "A Scalable Trustworthy Infrastructure for Collaborative Container Repositories," *Distributed Ledger Technologies*, 2022.
3. P. Sroufe, S. R. Tate, R. Dantu, E. Celikel. "Experiences During a Collegiate Cyber Defense Competition," *Journal of Applied Security Research*, Vol. 5, No. 3, 2010, pp. 382–396.
4. S. P. Joglekar and S. R. Tate. "ProtoMon: Embedded Monitors for Cryptographic Protocol Intrusion Detection and Prevention," *Journal of Universal Computer Science (JUCS)*, Vol. 11, No. 1, 2005, pp. 83–103.
5. M.-Y. Kao and S. R. Tate. "Designing Proxies for Stock Market Indices is Computationally Hard," *Quantitative Finance*, Volume 1, Number 3, May 2001, pp. 361-371.
6. J. H. Reif and S. R. Tate. "Fast Spatial Decomposition and Closest Pair Computation for Limited Precision Input", *Algorithmica*, Vol. 28, 2000, pp. 271–287.
7. M.-Y. Kao and S. R. Tate. "On-Line Difference Maximization", *SIAM Journal on Discrete Mathematics*, Vol. 12, No. 1, 1999, pp. 78–90.
8. S. R. Tate. "Band Ordering in Lossless Compression of Multispectral Images", *IEEE Transactions on Computers*, Vol. 46, No. 4, 1997, pp. 477–483.
9. J. H. Reif and S. R. Tate. "On Dynamic Algorithms for Algebraic Problems", *Journal of Algorithms*, Vol. 22, No. 2, 1997, pp. 347–371.
10. M. Kao, J. H. Reif, and S. R. Tate. "Searching in an Unknown Environment: An Optimal Randomized Algorithm for the Cow-Path Problem", *Information and Computation*, Vol. 133, No. 1, 1996, pp. 63–80.
11. S. R. Tate. "Stable Computation of the Complex Roots of Unity", *IEEE Transactions on Signal Processing*, Vol. 43, No. 7, 1995, pp. 1709–1711.
12. J. H. Reif and S. R. Tate. "Approximate Kinodynamic Planning Using L_2-norm Dynamic Bounds", *Computers and Mathematics with Applications*, Vol. 27, No. 5, 1994, pp. 29–44.
13. J. H. Reif and S. R. Tate. "Continuous Alternation", *Algorithmica*, Vol. 10, 1993, pp. 151–181.

14. J. H. Reif and S. R. Tate. "On Threshold Circuits and Polynomial Computation", *SIAM Journal on Computing*, Vol. 21, No. 5, October 1992, pp. 896–908.

15. M. Kao and S. R. Tate. "Online Matching with Blocked Input", *Information Processing Letters*, Vol. 38, May 1991, pp. 113–116.

16. J. H. Reif and S. R. Tate. "Optimal Size Integer Division Circuits", *SIAM Journal on Computing*, Vol. 19, No. 5, October 1990, pp. 912–924.

Refereed conference publications:

17. L. J. Crotts and S. R. Tate. "Comparison of Natural Deduction Theorem Provers used in Electronic Tutoring Systems," in *Proceedings of the 6th International Conference on Education and E-Learning (ICEEL)*, 2022, pp. 1–6.

18. L. J. Crotts and S. R. Tate. "Promoting a Common Testbed for Natural Deduction Tutoring Systems," in *Proceedings of the 6th International Conference on Education and E-Learning (ICEEL)*, 2022, pp. 43–49.

19. S. R. Tate and B. Yuan. "Minimum Size Build Environment Sets and Graph Coloring," in *Proceedings of the 17th International Conference on Software Technologies (ICSOFT)*, 2022, pp. 57–67.

20. S. R. Tate, M. Bollinadi, and J. Moore. "Characterizing Vulnerabilities in a Major Linux Distribution," in *Proceedings of the 32nd International Conference on Software Engineering & Knowledge Engineering (SEKE)*, 2020, pp. 538-543.

21. S. R. Tate and R. Vishwanathan. "Expiration and Revocation of Keys for Attribute-Based Signatures," in *Proceedings of the 29th Annual IFIP WG 11.3 Working Conference on Data and Application Security (DBSec)*, 2015, pp.153–169.

22. B. L. Kurtz, J. B. Fenwick, R. Tashakkori, A. Esmaili, and S. R. Tate. "Active Learning During Lecture Using Tablets," in *Proceedings of the SIGCSE Technical Symposium*, 2014, pp. 121–126.

23. S. R. Tate, R. Vishwanathan, and S. Weeks. "Encrypted Secret Sharing and Analysis by Plaintext Randomization," in *Proceedings of the 16th Information Security Conference*, 2013, pp. 49–65.

24. S. R. Tate, R. Vishwanathan, and L. Everhart. "Multi-user dynamic proofs of data possession using trusted hardware," *Proceedings of the 3rd ACM Conference on Data and Application Security and Privacy (CODASPY '13)*, 2013, pp. 353–364.

25. S. R. Tate and R. Vishwanathan. "General Secure Function Evaluation Using Standard Trusted Computing Hardware," *Proceedings of the 9th Annual Conference on Privacy, Security, and Trust (PST)*, 2011, pp. 221–228.

26. L. S. Iyer, X. Zhao, A. Chow, and S. R. Tate. "Computer Science and Information Technology (CSIT) Identity: An Integrative Theory to Explain Gender Gap in IT," *Proceedings of the International Conference on Information Systems (ICIS)*, 2011.

27. Y. Kong, J. Deng, and S. R. Tate. "A Distributed Public Key Caching Scheme in Large Wireless Networks," *Proceedings of the IEEE Global Telecommunications Conference – Communication & Information System Security (GLOBECOM '10)*, 2010.

28. V. Gunupudi and S. R. Tate. "Timing-Accurate TPM Simulation for What-If Explorations in Trusted Computing," *Proceedings of the International Symposium on Performance Evaluation of Computer and Telecommunication Systems*, 2010, pp. 171-178.

29. S. R. Tate and R. Vishwanathan. "Performance Evaluation of TPM-based Digital Wallets," *Proceedings of the International Symposium on Performance Evaluation of Computer and Telecommunication Systems*, 2010, pp. 179-186.

30. S. R. Tate and R. Vishwanathan. "Improving Cut-and-Choose in Verifiable Encryption and Fair Exchange Protocols using Trusted Computing Technology," *Proceedings of the 23rd Annual IFIP WG 11.3 Working Conference on Data and Application Security*, 2009, pp. 252–267.

31. P. Yu and S. R. Tate. "Online/Offline Signature Schemes for Devices with Limited Computing Capabilities," *RSA Conference 2008, Cryptographers' Track (CT-RSA)*, 2008, pp. 301–317.

32. V. Gunupudi and S. R. Tate. "Generalized Non-interactive Oblivious Transfer using Count-Limited Objects with Applications to Secure Mobile Agents," *12th International Conference on Financial Cryptography and Data Security*, 2008, pp. 98–112.

33. P. Yu and S. R. Tate. "An Online/Offline Signature Scheme Based on the Strong RSA Assumption," *3rd IEEE International Symposium on Security in Networks and Distributed Systems (SSNDS)*, proceedings as part of the *21st International Conference on Advanced Information Networking and Applications Workshops*, 2007, pp. 601–606.

34. V. Gunupudi and S. R. Tate. "Random Oracle Instantiation in Distributed Protocols Using Trusted Platform Modules," *3rd IEEE International Symposium on Security in Networks and Distributed Systems (SSNDS)*, proceedings as part of the *21st International Conference on Advanced Information Networking and Applications Workshops*, 2007, pp. 463–469.

35. H. Ge and S. R. Tate. "A Direct Anonymous Attestation Scheme for Embedded Devices," *Proceedings of the 10th International Conference on Theory and Practice of Public-Key Cryptography (PKC)*, 2007, pp. 16–30.

36. V. Gunupudi and S. R. Tate. "Design of the SAgent Security Framework for JADE," *Proceedings of the 18th Annual IASTED International Conference on Parallel and Distributed Computing and Systems (PDCS)*, 2006, pp. 90–95.

37. V. Gunupudi and S. R. Tate. "Exploring Data Integrity Protection in SAgent," *Proceedings of the International Workshop on Privacy and Security in Agent-based Collaborative Environments (PSACE)*, 2006, pp. 35–49.

38. V. Gunupudi, S. R. Tate, and K. Xu. "Experimental Evaluation of Security Protocols in SAgent," *Proceedings of the International Workshop on Privacy and Security in Agent-based Collaborative Environments (PSACE)*, 2006, pp. 60–74.

39. H. Ge and S. R. Tate. "Traceable Signature: Better Efficiency and Beyond," *Proceedings of Applied Cryptography and Information Security (ACIS)*, 2006, pp. 327–337.

40. H. Ge and S. R. Tate. "A Group Signature Scheme with Signature Claiming and Variable Linkability," *Proceedings of the 25th IEEE International Performance, Computing, and Communications Conference (IPCCC)*, 2006, pp. 497–504.

41. H. Ge and S. R. Tate. "Efficient Authenticated Key-Exchange for Devices with a Trusted Manager," *Proceedings of the 3rd IEEE International Conference on Information Technology (ITNG) – Embedded Cryptographic Systems track*, 2006, pp. 198–203.

42. V. Gunupudi and S. R. Tate. "SAgent: A Security Framework for JADE," *Proceedings of the 5th International Joint Conference on Autonomous Agents and Multiagent Systems (AAMAS)*, 2006, pp. 1116–1118.

43. K. Xu and S. R. Tate. "Universally Composable Secure Mobile Agent Computation," *Proceedings of the 7th International Conference on Information Security (ISC)*, 2004, pp. 304–317.

44. V. Gunupudi and S. R. Tate. "Performance Evaluation of Data Integrity Mechanisms for Mobile Agents," *Proceedings of the 2004 IEEE Conference on Information Technology: Coding and Computing (ITCC), Information Assurance and Security Track*, 2004, pp. 62–69.

45. S. P. Joglekar and S. R. Tate. "ProtoMon: Embedded Monitors for Cryptographic Protocol Intrusion Detection and Prevention," *Proceedings of the 2004 IEEE Conference on Information Technology: Coding and Computing (ITCC), Information Assurance and Security Track*, 2004, pp. 81–88.

46. S. R. Tate and K. Xu. "Mobile Code Security Through Multi-Agent Cryptographic Protocols," *Proceedings of the 4th International Conference on Internet Computing*, 2003, pp. 462–468.

47. M.-Y. Kao, A. Nolte, and S. R. Tate. "The Risk Profile Problem for Stock Portfolio Optimization," *Proceedings of the 32nd Annual ACM Symposium on Theory of Computing (STOC)*, 2000, pp. 228-234.

48. S. R. Tate and K. Xu. "General-Purpose Spatial Decomposition Algorithms: Experimental Results", *Proceedings of the 2nd Workshop on Algorithm Engineering and Experimentation (ALENEX)*, 2000, pp. 197–216.

49. M.-Y. Kao and S. R. Tate. "Designing Proxies for Stock Market Indices is Computationally Hard", *Proceedings of the Tenth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 1999, pp. 933–934.

50. B. Chapin and S. R. Tate. "Higher Compression from the Burrows-Wheeler Transform by Modified Sorting", *Proceedings of the Data Compression Conference (DCC)*, 1998, p. 532.

51. M.-Y. Kao and S. R. Tate. "On-Line Difference Maximization", *Proceedings of the Eighth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 1997, pp. 175–182.

52. J. H. Reif and S. R. Tate. "Dynamic Parallel Tree Contraction", *Proceedings of the Symposium on Parallel Algorithms and Architecture (SPAA)*, 1994, pp. 114–121.

53. S. R. Tate. "Band Ordering in Lossless Compression of Multispectral Images", *Proceedings of the Data Compression Conference (DCC)*, 1994, pp. 311–320.

54. J. H. Reif and S. R. Tate. "Dynamic Algebraic Algorithms", *Proceedings of the Fifth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 1994, pp. 290–301.

55. J. H. Reif and S. R. Tate. "The Complexity N-body Simulation", *20th Annual International Conference on Automata, Languages, and Programming (ICALP)*, 1993, pp. 162–176.

56. M. Kao, J. H. Reif, and S. R. Tate. "Searching in an Unknown Environment: An Optimal Randomized Algorithm for the Cow-Path Problem", *Proceedings of the Fourth Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 1993, pp. 441–447.

57. V. Pan, J. H. Reif, and S. R. Tate. "The Power of Combining the Techniques of Algebraic and Numerical Computing: Improved Approximate Multipoint Polynomial Evaluation and Improved Multipole Algorithms", *Proceedings of the 33rd Annual Symposium on Foundations of Computer Science (FOCS)*, 1992, pp. 703–713.

58. J. H. Reif and S. R. Tate. "Optimal Size Integer Division Circuits", *Proceedings of the 21st Annual ACM Symposium on Theory of Computing (STOC)*, 1989, pp. 264–270.

Book chapters:

59. S. R. Tate. "Randomized Searching on Rays or the Line," *Encyclopedia of Algorithms*, Springer-Verlag, 2016, pp. 1757–1759 (note: earlier version published in 2008, pp. 740–742).

60. R. R. Panko and S. R. Tate. "Digital Signatures and Electronic Signatures," in *The Handbook of Technology Management*, Hossein Bidgoli, ed., John Wiley & Sons, 2009.

61. M.-Y. Kao, A. Nolte, and S. R. Tate. "The risk profile problem for stock portfolio optimization," Chapter 11 in *Computational Methods in Decision-Making, Economics, and Finance*, Erricos Kontoghiorghes, Berc Rustem, and Stavros Siokos editors, by Kluwer Academic Publishers, 2002, pp. 211–228.

62. S. R. Tate. "Complexity Measures", Chapter 2 in the *Lossless Compression Handbook*, Khalid Sayood editor, Academic Press, 2002.

63. S. R. Tate. "Newton Iteration and Integer Division", Chapter 12 in *Synthesis of Parallel Algorithms*, edited by John H. Reif, pp. 539–572, 1993. San Mateo, CA: Morgan Kaufmann Publishers.

Dissertation:

64. S. R. Tate. "Arithmetic Circuit Complexity and Motion Planning", Ph. D. Dissertation, Duke University, 1991.

Technical reports, manuscripts:

65. S. R. Tate and K. Xu. "On Garbled Circuits and Constant Round Secure Function Evaluation," CoPS Lab Technical Report 2003-02, 2003.

66. J. H. Reif and S. R. Tate. "N-body Simulation II: Simulation of Moving Particles," University of North Texas Technical Report N-96-003, 1996.

67. J. H. Reif and S. R. Tate. "N-body Simulation I: Fast Algorithms for Potential Field Evaluation and Trummer's Problem," University of North Texas Technical Report N-96-002, 1996.

68. S. R. Tate. "Report on the Workshop on Data and Image Compression Needs and Uses in the Scientific Community," CESDIS Technical Report TR-93-99.

69. S. R. Tate. "Lossless Compression of Region Edge Maps," Duke University Computer Science Technical Report CS-1992-09.

Book reviews:

70. S. R. Tate. Review of *Polynomial and Matrix Computations; Volume 1: Fundamental Algorithms* by Dario Bini and Victor Pan. Appeared in *SIGACT News*, Vol. 26, No. 2, June 1995.

Presentations and non-peer reviewed publications:

- S. Tate and H. Nemati. "A Multidisciplinary CURE in Information Security," UNC System Summit on Course-Based Undergraduate Research Experiences, May 2017.
- S. Tate. "Certified Software for High-Assurance Security," *IEEE Computer Society Chapter Meeting*, North Carolina A&T University, February 2017.
- S. Tate. "Industry-University Collaboration," (panel discussion with G. Dozier and R. Robless), *Triad Developers Conference*, Winston-Salem, NC, Feb 2016.
- S. Tate. "State of Technology in the Triad," Triad Developers Guild Roundtable Discussion (with D. Douglas, R. Robless, B. Wallis, and B. Hitney), Dec 2012.
- A. Chow, S. Tate, and L. Iyer. "Computer Science and Information Technology Identity Formation," *STARS Celebration*, August 2012, Hampton, VA.
- S. Morrissett and S. Tate. "North Carolina Has Talent: Teachers and Students," North Carolina Department of Public Instruction, *CTE Summer Conference*, July 2011.
- S. Tate. "Privacy in the Digital Age," *Science on Tap* (informal science presentations in Greensboro, NC), December 2009.
- S. Tate. "Hardware-Assisted Security: The Power of Small Changes," Winston-Salem State University, February 2009.

- S. Tate. "Trusted Computing: What it does, what it doesn't do, ... and what we don't know," UNC Wilmington, October 2008.
- S. Tate. "Hardware-Assisted Security: The Power of Small Changes," Duke University, September 2008.
- S. Tate. "Security Challenges for CS Students (or anyone else who creates applications)," Appalachian State University, March 2008.
- H. Ge and S. R. Tate. "Efficient Authenticated Key-Exchange for Devices with a Trusted Manager," *South Central Information Security Symposium*, April 2006.
- F. Chang, G. White, and S. Tate. "How to Build Lab Exercises and Capture the Flag Activities", panel at the *9th Colloquium for Information Systems Security Education*, June 2005. (*Our panel received the highest evaluation of any presentation or panel at this 4-day colloquium.*)
- V. Gunupudi and S. R. Tate. "A Security Framework for the JADE Mobile Agent Platform," *South Central Information Security Symposium*, April 2005.
- S. Tate. "Security Protections for Mobile Agents," Southern Methodist University, August 2004.
- K. Xu and S. R. Tate. "Universally Composable Secure Mobile Agent Computation," *South Central Information Security Symposium*, April 2004.
- S. R. Tate and K. Xu. "On Garbled Circuits and Constant Round Secure Function Evaluation," CoPS Lab Technical Report 2003–02.
- Invited presentation: "Mobile Agent Computation with Secret Data," the University of Texas at Arlington, April 2003.
- K. Xu and S. R. Tate. "Privacy of Mobile Agent Data on Malicious Hosts Using Multi-Agent Protocols," *South Central Information Security Symposium*, April 2003.
- V. Gunupudi and S. R. Tate. "A Flexible Object-Oriented Approach to Data Integrity in Mobile Agents," *South Central Information Security Symposium*, April 2003.
- S. R. Tate and K. Xu. "Some Security Issues in a Garbled Circuit Construction," CRYPTO '03 Rump Session Presentation, 2003.
- "Mobile Agent Security Through Multi-Agent Protocols," poster presentation at the NSF Cyber Trust Point Meeting, Baltimore, MD, August 2003.

TEACHING

- Experience teaching a wide range of courses, including introductory undergraduate courses, assembly language, data structures, file structures, cryptography, computer security and secure electronic commerce courses (both undergraduate and graduate), mathematics for computer science, undergraduate and graduate algorithms, research-oriented special topics classes (including trusted computing and software security), and several advanced graduate seminars (topics: data compression, on-line algorithms, randomized algorithms, Java and network security, and cryptography and security).
- Worked with other faculty to expand computer security courses at UNC Greensboro from a single course to a three-course series (with additional courses as "special topics" classes).
- Worked extensively with area high schools, especially Weaver Academy, on curriculum and outreach activities.
- Created and maintained a five-module interactive Python tutorial, using Runestone Interactive tools; used in multiple UNCG classes (CSC 100, CSC 101, CSC 110, and CSC 120), and in UNCG's Master's in Informatics and Analytics "Python programming bootcamp" (2017 – 2025)
- Designed a custom version of the UC Berkeley "Beauty and Joy of Computing" class for UNC Greensboro (offered as CSC 100). While following the UC Berkeley outline, our version has a full set of locally-developed lectures and extensive lab exercises. Worked with teachers at a local high school (Weaver Academy) to offer this course at the high school as well. Designed around the College Board's "CS Principles" course/exam, we now offer credit for this class to high school students who make a 3 or better on the AP CS Principles exam. Offered for the first time Fall 2012.
- Re-implemented a "fractal explorer" in JavaScript, based on an earlier Java applet from Ron Eglash at Rensselaer Polytechnic Institute (RPI). This was used to teach recursive constructions in a culturally-situated context, and has been used in my UNCG CSC 100 class, as well as by RPI and others.
- Designed an innovative class (CSC 110: Computational Problem Solving), taking a different approach to teaching mathematics concepts and problem-solving skills as part of the UNC Greensboro general education curriculum, 2009.
- Member of the UNCG delegation to an AAC&U Summer Institute on Integrated Learning, Burlington, VT, July 2012.
- Participated in the UNCG Veteran and Military Affiliate Education Institute, June 2013.
- Created and led a Living-Learning Community for freshman computer science majors, 2014–2015.
- Organizing committee and computer science lead, AToMS Living-Learning Community, a residential cohort-based learning community for computer science, chemistry, physics, and mathematics freshmen. 2012–2014.
- Participated in teaching workshops on secure electronic commerce and network security (Washington D.C., March 2003; Tulsa, OK, July 2003).

- Designed and established a multi-course sequence in computer security at both undergraduate and graduate levels at the University of North Texas. Applied for and received two federal certifications, showing a mapping of our computer security courses to two the Committee for National Security Systems (CNSS) training standards 4011 (for Information Security Professionals) and 4013 (for Secure System Administration).
- Organized and supervised a group of three graduate students in the *Honeynet Reverse Engineering Challenge*, placing second in this international competition (May–June 2002).
- Organized and coached a team of 8 students (including 2 from the Department of Information Technology and Decision Sciences) for participation in the *1st Texas Collegiate Cyber Defense Contest*, San Antonio, April 2005 (travel funding from Microsoft).
- Organized and supervised a group of 6 directed study students who performed a formal security audit of the Department of Computer Science systems and network (Fall 2005).

Individual Student Mentoring

- Five graduated Ph.D. students at the University of North Texas (Brent Chapin, 2001; Ke Xu, 2004; He Ge, 2006; Vandana Gunupudi, 2007; Ping Yu, 2008).
- Supervised 15 master's students at UNCG (5 thesis; 10 project) – most recent students/topics:
  - Jerry Terrell. "An authentication system for VR applications using a physical device" (completed May 2025).
  - Nitish Reddy Komma. "Evaluating ASCON 128: A Comparative Study with AES on Speed and Time Efficiency" (completed May 2024).
  - Larry Joshua Crotts. "Understanding How Students Learn and Solve Natural Deduction Proofs" (completed May 2022).
  - Kathryn Reardon. "Android Device Risk Assessment Tool: Using Common Permissions to Identify Applications Used in Intimate Partner Violence" (completed Dec 2020).
  - Moulika Bollinadi. "User Privacy in Smart Home Devices – IoT Security" (completed Dec 2019).
  - Bo Yuan. "Heuristic graph coloring algorithms based on Linux package dependencies" (completed Dec 2019).
- Served on 18 Ph.D. committees and 7 Master's committees at UNT (other than my own students).
- External reviewer and Ph.D. committee member for a student (Elliott Landowne) at the City University of New York.
- Mentored approximately 30 undergraduate students in Senior Project work, 2007–2018.
- Mentored four undergraduate students in UNCG Honors projects, and numerous undergraduate contract honors courses
- Supervised over a dozen students (both at undergraduate and graduate levels) in directed study and independent projects.

SERVICE ACTIVITIES

University/Department Service – UNC Greensboro:

- College of Arts and Sciences, College Assembly (and executive committee), Chair-elect, July 2024 – June 2025
- UNCG Faculty Senate, Elections and Appointments Committee (Aug 2024 – June 2025)
- C.S. Graduate Committee (member Aug 2019 – Dec 2020; Chair Aug 2024 – July 2025)
- C.S. Undergraduate Committee (member Jan 2020 – July 2022 ; Chair Aug 2022 – July 2023)
- C.S. Personnel Committee (Aug 2019 – May 2025)
- C.S. Search Committee Chair (Oct 2019 – Feb 2020, and Sep 2021 – May 2022; Nov 2024 – Mar 2025)
- C.S. Ph.D. program planning committee chair (Jan 2019 – July 2022)
- Faculty Advisor: UNCG Cybersecurity/InfoSec Club (Fall 2012 – July 2025)
- Faculty Advisor: UNCG Competitive Programming Club (Fall 2023 – July 2025)
- UNCG Programming Contest Team Coach (2007 – 2025)
- C.S. Department Head and member of the College of Arts and Sciences Administrative Council (Aug 2007 – July 2019)
- C.S. Director of Undergraduate Studies (Aug 2022 – July 2023)
- C.S. Graduate Programs Director (Aug 2024 – July 2025)
- UNCG Computer Science Industry Advisory Board, leader (Dec 2008 – July 2019)
- Undergraduate Academic Advising: Advised a regular load of 30–45 undergraduate majors each semester for course selection and planning
- Faculty Advisor: UNCG Student ACM Chapter (2009 – 2019)
- Faculty Advisor: UNCG STARS Computing Corps (2015 – 2018)
- STAMPS (Science, Technology, and Mathematics Preparation Scholarships) Faculty Mentor (Aug 2017 – July 2022)
- STARS Alliance, UNCG Academic Liaison (2011 – 2016)
- STAMPS (Science, Technology, and Mathematics Preparation Scholarships) Executive Committee (Aug 2010 – July 2015)
- UNCG Institutional Effectiveness Committee (2009 – 2010)
- UNCG Science Advisory Board (2008 – 2009)

- Endowed professor nomination review and evaluation committee (2012 and 2013)
- UNCG RISE (Research and Instruction in STEM Education) Network, Advisory Board Member (2010–2019)

University/Department Service – University of North Texas:

- C.S. Department Personnel Affairs Committee (Sep 1999 – May 2001, Sep 2002 – July 2007; *Chair:* Sep 2000 – May 2001, Sep 2002 – Aug 2004)
- C.S. Department Research Enhancement Committee (Sep 2001 – Dec 2001, Sep 2002 – Aug 2005, Sep 2006 – July 2007)
- C.S. Department Faculty Search Committee (Sep 1996 – Aug 1998, Sep 2002 – May 2003, Sep 2005 – Aug 2006)
- C.S. Department Graduate Committee (Sep 1993 – Aug 1994, Sep 1995 – Aug 2001; *Chair:* Sep 1996 – Aug 2001, Sep 2004 – Aug 2005, Sep 2006 – July 2007)
- C.S. Department Undergraduate Committee (Sep 1994–Aug 1996, Sep 2001 – Dec 2001)
- C.S. Department Executive Committee (July 1995 – Aug 2000, Sep 2005 – July 2007)
- Ad-hoc Department PhD Program Evaluation Committee (Sep 2005 – Aug 2006)
- Ad-hoc Department Committee on Merit Evaluation (May 2006 – July 2007)
- C.S. Department Chair Search Committee (Oct 1999 – May 2001)
- Member of the Executive Committee, *Texas Center for Digital Knowledge* (*TxCDK*), Nov 2003 – Aug 2005.
- Math Department Faculty Search Committee, external member (Sep 1999 – Aug 2000)
- UNT Committee for Implementation of Electronic Transmission of Theses and Dissertations (Dec 1997 – May 1998)
- UNT College of Engineering Founding Dean Search Committee (May 2002 – Dec 2002)
- College of Engineering appeal/grievance committees, Spring 2004 and Spring 2005.
- Search Committee, UNCG Department of Information System and Operations Management, Department Head Search, 2011–2012.
- Computer Science Graduate Coordinator/Advisor and chair of the graduate committee (Sep 1996 – Aug 2001).
- Area coordinator for Algorithms comprehensive exam. Spring 1994, Spring 1996, Fall 1996, Spring 1998, Spring 2001, Fall 2002, Fall 2004.
- Faculty advisor for the Computer Science Graduate Student Association (Dec 1996 – May 1998).

- Faculty advisor for the student ACM chapter (Feb 1995 – Aug 2001).
- Served as official Computer Science contact to the College of Education (Feb 1995 – Jan 1998). Involved preparation of materials for COE review by the National Council for Accreditation of Teacher Education (NCATE).

Community-Based Service and Outreach:

- Bi-Partisan Commission for the Future of North Carolina Elections, co-chair of the Committee on Cyber Security, Ballot Security, and List Maintenance (2023 – 2025)
- North Carolina Trusted Elections Network, panel member for the "NC Trusted Elections Tour," six townhall events, May 2024 – Sept 2024
- Computer Science Teachers Association (CSTA), North Carolina Piedmont Chapter, Vice President (2011 – 2019)
- Hosted "Internet of Things" forum at UNCG, with sponsorship from IBM and Meridian IT – over 100 attendees (2016)
- FIRST Robotics outreach and volunteering
  - FIRST Lego League (FLL), keynote speaker at regional competitions (2014 and 2015)
  - FIRST Tech Challenge (FTC) team mentoring (Grimsley High School 2013–2015 and Northwest Guilford High School 2016–2017)
  - FIRST Robotics Competition (FRC) team coach (Grimsley High School 2013–2015) and volunteer (Flying Platypi community team 2015–2016)
- Featured on two Fox 8 news stories (Wi-Fi security on Nov 25, 2014; E-mail security on Oct 9, 2014)
- Organized "Computer Science Day" events with the UNCG STARS Computing Corps for high school students and teachers (2011, 2012, 2013, and 2015)
- "IT is for Girls" – created with Lakshmi Iyer as weekend events in 2009–2010, and expanded to week-long summer camps in 2011. Significant involvement through 2014 (the summer events have continued through 2019).
- Computer Science introductory/motivational presentations for high school students (Weaver Academy and Ragsdale High School, 2011–2016)
- Career day representative, Northwest Guilford High School (2009)

Service to the Profession:

- Louisiana Board of Regents Departmental Enhancement proposal review panel chair (two review cycles: 2018–2019 and 2020–2021)
- Advisory Board Member, NSF-funded BRIDGES project ("Broadening Identities for Diverse Youth in STEM through Socioenvironmental Problem Solving"), providing expertise on computational thinking exercises (2018 – 2021)
- NSF Review Panels member – multiple panels (2000, 2003, 2006, 2008, 2010, 2018).
- Reviewer for NASA (National Aeronautics and Space Administration) grant proposals (2009, 2015).
- External reviewer for Central Michigan University internal grant competition (2012).
- External reviewer for promotion and tenure cases in the U.S. and Canada (2008, 2009, 2013, 2017, 2021).
- Editorial board, *Journal of Information Assurance and Security (JIAS)*.
- Regular conference program committee memberships, including (some multiple years): *Colloquium for Information Systems Security Education (CISSE)*, *International Symposium on Information Assurance and Security*, *Workshop on Information Assurance (WIA)*, *Hawaii International Conference on System Sciences (HICSS)*, *International Workshop on Security in Networks and Distributed Systems (SSNDS)*, *IASTED International Conference on Communication, Network and Information Security (CNIS)*, *International Symposium on Parallel Architectures, Algorithms, and Networks (I-SPAN)*, *International Conference on Information Warfare and Security (ICIW)*, *International Conference on Information Security and Assurance (ISA)*, *IEEE International Conference on Distributed Computing Systems (ICDCS)*, *International Conference on Autonomic and Trusted Computing (ATC)*, *Secure Knowledge Management Workshop (SKM)*, and *South Central Information Security Symposium (SCISS)*.
- At-conference activities (session chair, etc.) including: *International Conference on Internet Computing*, *Information Assurance and Security (IAS)*, *International Conference on Information Security (ISC)*, and *IFIP WG 11.3 Working Conference on Data and Application Security (DBSec)*.
- Refereed papers for many journals and conferences, including *SIAM Journal on Computing*, *Journal of Algorithms*, *Algorithmica*, *Information and Computation*, *Journal of Combinatorial Optimization*, *Journal of Systems and Software*, *Journal of Universal Computer Science*, *Journal of Systems and Software*, *Journal of Parallel, Emergent and Distributed Systems*, the *ACM-SIAM Symposium on Discrete Algorithms*, *Computers and Mathematics with Applications*, *IEEE Trans. on Dependable and Secure Computing*, *IEEE Trans. on Information Theory*, *IEEE Trans. on Parallel and Distributed Processing*, *IEEE Trans. on Image Processing*, *IEEE Trans. on Mobile Computing*, *IEEE Trans. on Computers*, *Mathematical Problems in Engineering*, *Transactions on Emerging Telecommunications Technologies*, *Transactions on Reliability*, *Neural Computing and Applications*, *Parallel Processing Letters*, *Information Processing Letters*, the *Internet Encyclopedia*, *The Handbook of Information Security*, the *Symposium on Theoretical Aspects of Computer Science*, the *Workshop on Wireless Mobile Multimedia*, the *Journal of Information Science and*

Engineering, the *Journal of Visual Communication and Image Representation*, *PLOS (Public Library of Science) One*, the *IEEE International Conference on Information Reuse and Integration*, the *IEEE International Conference on Information Technology: Coding and Computing (ITCC)*, the *International Parallel Processing Symposium*, and the *ACM Computer Science Conference*.

- Reviewed books and book chapters for *Introduction to Data Compression* by Khalid Sayood, *Cryptography and Network Security: Principles and Practice* by William Stallings, and others.

SOFTWARE

Major port of PPP (Point-to-Point Protocol) software to DEC OSF/1, including kernel drivers and user-level support software. This software has been widely distributed, being obtained by users from many other states and foreign countries, and was subsequently included with the official distribution of Digital UNIX (beginning with version 4.0). Last version released by me November, 1996.

Graphical policy browser/analyzer for Security-Enhanced Linux. Last version released March, 2002. Available at `http://cops.csci.unt.edu/projects/selinux/main.html`

SAgent security framework for the JADE mobile agent platform (over 10,000 lines of code). Available at `http://cops.csci.unt.edu/sagent`.

Extensible, Timing-Accurate TPM Simulator. Available at `https://span.uncg.edu/tpmsim.html` (developed with V. Gunupudi, A. Kilgore, S. Rangaraju, and R. Vishwanathan).

JavaScript Fractal Explorer. Modern re-implementation of an earlier Java Applet from the "Culturally Situated Design Tools" project at RPI. Available at `https://github.com/srtate/fracexpl`.