

BIOGRAPHICAL SKETCH

Neelam Soundarajan

(Date: April 2023)

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Education:

Ph.D., Computer Science, Bombay University, 1978.
Thesis topic: Semantics of parallel programs and coroutines.
M.Sc., Physics, Bombay University, 1972.
B.Sc., Physics, Bombay University, 1970.

Employment:

Associate Professor, Ohio State University, 1988 - present.
Assistant Professor, Ohio State University, 1982 - '88.
Visiting Assistant Professor, Ohio State University, 1978 - '80, 1981-'82.
Post-doctoral fellow, Oslo University, 1980-'81.

Publications:

Journal Publications:

1. N Soundarajan, S Camp, D Lee, R Ramnath, B Weide, NEWPATH: An innovative program to nurture IT entrepreneurs, *Advances in Engineering Education*, 42 manuscript pages, 2015 (to appear).
2. N Soundarajan, R Gustafson, Learning Objects for Collaborative Learning in Engineering Programs, *International Journal of Collaborative Engineering*, Vol. 1, No. 3/4, pp.353 - 370, 2014.
3. N Soundarajan, A novel, sustainable model of assessment of program outcomes for a CSE program, *Computers in Education Journal*, Vol. 3, No. 2, 59-71, 2012.
4. N Soundarajan, Position paper: Program objectives, outcomes and assessments: A call to rethinking ABET criteria, *Computers in Education Journal*, Vol. 3, No. 2, 79-81, 2012.
5. N Soundarajan, J Hallstrom, G Shu, A Delibas, Patterns: From system design to software testing, *Innovations in Systems and Software Engineering*, Vol. 4, pp. 71-85, 2008.
6. N Soundarajan, Program Assessment and Program Improvement: Closing the Loop, *Journal of Assessment and Evaluation in Higher Education (AEHE)*, Vo.. 29, No. 5, 597-610, 2004.
7. N Soundarajan, Program Assessment and Program Improvement: Closing the Loop, *Journal of Assessment and Evaluation in Higher Education (AEHE)*, Vol. 29, No. 5, 597-610, 2004.

8. J Jiang, TH Lai, N Soundarajan, On Distributed Dynamic Channel Allocation in Mobile Cellular Networks, *IEEE Transactions on Parallel and Distributed Systems*, Vol. 13, no. 10, pp. 1024-1037, 2002.
9. N Soundarajan, B Tyler, Testing polymorphic behavior, Proceedings of Technology of Object Oriented Languages and Systems (TOOLS), editor: C. Mingins, in *Special Issue of Journal of Object Technology (JOT)* (<http://www.jot.fm>), vol. 1, no. 3, pp. 173-188, 2002.
10. J Hallstrom, N Soundarajan, Incremental Development Using Object Oriented Frameworks: A Case Study, Proceedings of Technology of Object Oriented Languages and Systems (TOOLS), editor: C. Mingins, in *Special Issue of Journal of Object Technology (JOT)* (<http://www.jot.fm>), vol. 1, no. 3, pp. 189-206, 2002.
11. N Soundarajan, S Fridella, Understanding OO frameworks and applications, *Informatica*, vol. 25, pp. 297-308, 2001.
12. N Soundarajan, Preparing for accreditation under EC 2000: An experience report, *Journal of Engineering Education*, vol. 91, no. 1, pp. 117-124, 2002.
13. N. Soundarajan, Documenting framework behavior, in special issue of *ACM Computing Surveys* on OO Application Frameworks, Vol. 32, No. 1 (es), pp. 1-4, 2000. On the web, article no. 14, at: <http://www.acm.org/pubs/contents/journals/surveys/2000-32/#1es>
14. N. Soundarajan, S. Fridella, Base classes, derived classes, and client programs: effectively reasoning about inheritance based code, *J. of Object Oriented Programming*, Vol. 13, No. 4, pp. 13-22, 2000. (Contribution: Stating the problem, developing the solution, writing the paper; 70%).
15. A Elmagarmid, M Liu, N Soundarajan, A distributed deadlock detection algorithm and its correctness proof, *IEEE Transactions on Software Eng.*, Vol. 14, 1988, pp. 1443-1452.
16. A Sobel, N Soundarajan, A proof system for Distributed Processes, *Acta Informatica*, Vol. 8, 1987, pp. 305-332.
17. M Joseph, A Moitra, N Soundarajan, Proof rules for fault tolerant distributed programs, *Science of Computer Programming*, Vol 8, 1987, pp. 43-67.
18. N Soundarajan, Total correctness of CSP programs, *Acta Informatica*, Vol. 23, 1986, pp. 193-215.
19. N Soundarajan, Axiomatic semantics of CSP, *ACM Trans. on Prog. Lang. and Systems*, Vol. 6, 1984, pp. 647-662.
20. N Soundarajan, Denotational semantics of CSP, *Theoretical Computer Science*, Vol. 33, 1984, pp. 279-304.
21. N Soundarajan, A proof technique for parallel programs, *Theoretical Computer Science*, Vol. 31, 1984, pp. 13-29.
22. N Soundarajan, Correctness proofs of CSP programs, *Theoretical Computer Science*, Vol. 24, 1983, pp. 131-141.
23. N Soundarajan, Axiomatic proofs of total correctness of programs, *Information Processing Letters*, Vol. 8, 1979, pp. 274-277.

Some Conference Publications:

1. N Soundarajan, Massachus PKAL, Jan. 2023, Video Games for STEM Education, Mass PKal Conference, Jan. 2033, Online Conference (PKAL is a set of NSF-funded “Project Kaleidoscope” centers for improving STEM education).
2. S Joshi, N Soundarajan, J Morris, Innovative Approach to Online Argumentation in Computing and Engineering Courses, ASEE Annual Conference & Exposition, Salt Lake City, Utah, 2018 (13 pages).
3. S Joshi, N Soundarajan, Using anonymity and rounds-based structure for effective online discussions, ASEE Annual Conference & Exposition, Columbus, Ohio, 2017 (12 pages).
4. S Joshi, N Soundarajan, Enabling deep conceptual learning in computing courses through conflict-based collaborative learning, IEEE Frontiers in Education Conference (FiE), pp. 1-9, IEEE, 2016.
5. S Joshi, N Soundarajan, CONSIDER: A Novel Approach to Conflict-Driven Collaborative Learning in Engineering Courses, 2016 ASEE Annual Conference & Exposition, New Orleans, Louisiana, 2016 (17 pages).
6. N Soundarajan, S Joshi, R Ramnath, Work-in-Progress: Conflict-Driven Cooperative-Learning in Engineering Courses, Proc. of the ASEE Annual Conference, pp. 1-14, 2015.
7. N Soundarajan, S Joshi, R Ramnath, Collaborative and Cooperative-Learning in Software Engineering Courses, Proc. of the Int. Conf. on Software Eng. (ICSE-JSEET), pp. 1–4, 2015.
8. S Joshi, N Soundarajan, R Ramnath, Conflict-Driven Cooperative-Learning in Computing Courses (Abstract Only), Proc. of the 46th ACM Symp. on Computer Sc. Education (SIGCSE), pp. 685-685, 2015.
9. N Soundarajan, S Joshi, R Ramnath, A novel approach to collaborative learning in the flipped classroom, Proc. of the ASEE Annual Conference, pp. 1-11, 2014.
10. N Soundarajan, R Ramnath, B Weide, A multi-pronged approach to nurturing IT entrepreneurs, Proc. of the ASEE Annual Conference, pp. 18-34, 2013.
11. N Soundarajan, Work-in-progress: A novel approach to collaborative learning in engineering programs, Proc. of the ASEE Annual Conference, pp. 1-17, 2013.
12. N Soundarajan, Work in progress: Collaborative and reflective learning in engineering programs, Proc. of the 41st ASEE/IEEE Frontiers in Education Conference, ed. D. Bundy, IEEE, pp. S2E-1–S2E-2, 2011.
13. N Soundarajan, Work in Progress: Collaborative and Reflective Learning in Engineering Programs, Proc. of the ASEE Annual Conference, pp. 1-14, 2011.
14. N Soundarajan, R Khatchadourian, D Bronish, Formalizing reusable aspect-oriented concurrency control, Int. Conf. on Software Eng. & Knowledge Eng., pp. 111-114, 2011.
15. J Hallstrom, N Soundarajan, Reusing Patterns through Design Refinement, Proc. of Int. Conf. on Software Reuse, Springer LNCS, pp. 225-235, 2009.

Book chapters:

1. N Soundarajan, J Hallstrom, Precision, flexibility and tool support: Essential elements of pattern formalization, in Design Pattern Formalization Techniques, ed. by T. Taibi, IGI Publishing, pp. 280-301, 2007.
2. B Tyler and N Soundarajan, Testing polymorphic behavior of framework components, in Testing COTS Components and Systems, ed. by Beydada and Gruhn, Springer, 2004, pp. 16–33.
3. N Soundarajan and S Fridella, Incremental Reasoning for Object Oriented Systems, LNCS volume #2635 honoring Ole-Johan Dahl, ed. by Owe, Krogdahl, Lyche, 2004, pp. 302–333.
4. N.Soundarajan, Understanding frameworks, Chapter in ‘Building Application Frameworks: Object-Oriented Foundations of Framework Design’, ed. M. Fayad, J. Wiley, pp. 289–308, 1999.

Research Interests

1. Over the last several years, I have become very interested in effective use of computing tools and techniques in STEM education, including fundamental questions about how students learn most effectively. Recently, I have become interested in the potential of well-designed video games for improving STEM education at the high school and college levels. The OSU-IITD grant that I received is in support of this work. I am working with people from Metro High School to design and implement such games.
2. My other area of interest is in Object-Oriented and Distributed Systems. In particular I am interested in specification and verification issues involving these systems, and in languages for such systems including Android systems.
3. I am also interested in various educational issues such as entrepreneurship education and assessment of program outcomes. I serve as a program evaluator for the Computing Accreditation Commission (CAC) of ABET.

Awards and recognitions

1. I received an *Outstanding Contribution* award from the CAC for my work as program evaluator for the Computing Accreditation Commission.

Current grants:

1. Interdisciplinary Innovation Team Development Award, OSU grant, \$4400; Jan. 2023-Dec. 2023, \$4,400; PI (Rajiv Ramnath and Kui Xie of Education are Co-PIs)

Research advisees

1. I am currently advising seven *undergraduates*, including three women, all of whom are interested in video games for STEM education. Another undergraduate advisee completed his BS-CSE program at the end of fall '22 but continues to work on this project. He will be joining the PhD program in the Design Department in Au '23 and we plan to continue our work on the project.
2. I have no current graduate advisees.