VIRAJ KUMAR
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Academic Employment

2018 – present	Visiting Professor, Divecha Centre for Climate Change, IISc
2013 – 2018	Professor in Computer Science, PES University
2017 – 2018	Chief Consultant, Technical Secretariat to the Committee to draft the National Education Policy, MHRD
2011 – 2013	Assistant Professor in Computer Science, NIIT University
2009 – 2011	Visiting Lecturer, Department of Computer Science, University of Illinois at Urbana-Champaign
2007 – 2009	Assistant Professor, College of the Holy Cross, Worcester, Massachusetts

Education

2007	Ph.D., Computer Science, University of Illinois at Urbana-Champaign
2004	M.S., Computer Science, University of Illinois at Urbana-Champaign
2000	M.Sc., Applied Statistics and Informatics, IIT Bombay
1998	B.Sc. (Hons.), Mathematics, St. Stephen's College, Delhi University

Papers under review

- Ian Pollock, Bedour Alshaigy, Andrew Bradley, Birgit R. Krogstie, Viraj Kumar, Linda Ott, Anne-Kathrin Peters, Charles Riedesel, Charles Wallace. 1.5 Degrees of Separation: Computer Science Education in the Age of the Anthropocene. Submitted to ACM ITiCSE'19 Working Group, Aberdeen, UK.
- Janet Hughes, Feng Wang, Cheryl Brown, Gerry Cross, Viraj Kumar, J. Paul Myers Jr., Ethan Plaut, Elizabeth von Briesen. Global and Local Agendas of Computing Ethics Education: Viewpoints and Provocations. Submitted to ACM CompEd'19 Working Group, Chengdu, China.

Refereed papers in Journals/Proceedings

2019

- Amber Settle, Brett A. Becker, Rodrigo Duran, Viraj Kumar and Andrew Luxton-Reilly. Improving Global Participation in the SIGCSE Technical Symposium. ACM SIGCSE'20, Portland, USA.
- Milan J. Srinivas, Michelle M. Roy and Viraj Kumar. Towards Generating Plausible Distractors for Code Comprehension Multiple-Choice Questions, 10th International Conference on Technology for Education (T4E'19) (to appear).
- M.B.Rajani and Viraj Kumar. Nalanda: A Tale in the Twist. Journal of Society of Architectural Historians, California University Press (to appear).

2018

- Savitha Murthy, Ankit Anand, Ajaykumar Cholin, Avinash Kumar, Ankita Shetty, Aditya D Bhat, Akshay Venkatesh, Lingraj Kothiwale, Viraj Kumar and Dr. Dinkar Sitaram. Pronunciation Training on Isolated Kannada Words using "Kannada Kali" - A Cloud Based Smart Phone Application, 7th International Conference on Cloud Computing in Emerging Markets (CCEM'18) (to appear).

- Savitha Murthy, Ankit Anand, Avinash Kumar, Ajay Cholin, Ankita Shetty, Aditya Bhat, Akshay Venkatesh, Lingaraj Kothiwale, Viraj Kumar and Dinkar Sitaram. Kannada Kali: A Smartphone Application for Evaluating Spoken Kannada Words and Detecting Mispronunciations Using Self Organizing Maps, 9th International Conference on Technology for Education (T4E'18), pp. 1-7. DOI: 10.1109/T4E.2018.00009.
- Priya Nayak, Rhythm Girdhar and Viraj Kumar. Plagiarism in Low-Stakes Unproctored Internet Testing for Programming Aptitude, 9th International Conference on Technology for Education (T4E'18), pp. 134-137. DOI: 10.1109/T4E.2018.00036.
- Varun Nagaraj Rao, Ramadas Mahale, Sunil Pai, Viraj Kumar. Extracting and Visualising Character Associations in Literary Fiction using Association Rule Learning, 7th International Conference on Advances in Computing, Communications and Informatics (ICACCI'18), pp. 1095-1101. DOI: 10.1109/ICACCI.2018.8554714.
- Milan J. Srinivas, Michelle M. Roy, Jyotsna N. Sagri and Viraj Kumar. Assessing Scratch Programmers' Development of Computational Thinking with Transaction-Level Data. In: S. Chakraverty, A. Goel and S. Misra (eds.), *Towards Extensible and Adaptable Methods in Computing*, Springer Communication in Computer and Information Science, pp. 399-407. DOI: 10.1007/978-981-13-2348-5.
- Adithya A. Philip, Sarah C. Shekeran, Pranav Singhania, Ram P. Rustagi and Viraj Kumar. BeaconNet: A beacon-based smartphone ad-hoc network for resource-constrained classrooms. Proceedings of the 18th International Conference on Advanced Learning Technologies (ICALT'18), pp: 93-97. DOI: 10.1109/ICALT.2018.00029.
- Shrikanth M. Yadav, Saurav K. Shastri, Ghanashyam B. Chakravarthi, Divya Rao A., Viraj Kumar and Vinod Kumar Agrawal. A Fast, Parallel Algorithm for Fully Overlapped Allan Variance and Total Variance. IEEE Sensors Letters, vol. 2, no. 2, pp. 1-4, DOI: 10.1109/LSENS.2018.2829799.
- Ram P. Rustagi and Viraj Kumar, Understanding TCP States, Advanced Computing and Communications, 2(4), http://accs.magnumdev.webfactional.com/experiential-learning-of-networking-technologies-understanding-tcp-states-part-1.
- Ram P. Rustagi and Viraj Kumar, Understanding Transport Layer Basics, Advanced Computing and Communications, 2(3), http://accs.magnumdev.webfactional.com/experiential-learning-of-networking-technologies-understanding-transport-layer-basics.
- Ram P. Rustagi and Viraj Kumar, Understanding Web Performance, Advanced Computing and Communications, 1(4), http://accs.magnumdev.webfactional.com/experiential-learning-of-networking-technologies-understanding-web-performance.

2017

- Rahul S. Mahadev R.S., Arvind Seshadri, Sriram Rajamani S. and Viraj Kumar. Using Trusted Execution Environments to Enable Integrity of Offline Test Taking. In: D. Contractor and A. Telang (eds.), Applications of Cognitive Computing Systems and IBM Watson. Springer, Singapore.
- Ekta Gupta, Sonia Das, Kuili Suganya, Viraj Kumar and M.B.Rajani, The need for a National Archaeological Database, R. R. Navalgund and Ravi Korisettar (eds.), Geospatial Techniques in Archaeology, Current Science Special Section.
- Ram P. Rustagi and Viraj Kumar, Understanding Network Delays, Advanced Computing and Communications, 1(3), http://accs.magnumdev.webfactional.com/experiential-learning-of-networking-technologies-understanding-network-delays.
- Ram P. Rustagi and Viraj Kumar, Understanding the HTTP Protocol, Advanced Computing and Communications, 1(2), http://accs.magnumdev.webfactional.com/experiential-learning-of-networkingtechnologies.

- Ram P. Rustagi and Viraj Kumar, Experiential Learning of Networking Technologies, Advanced Computing and Communications, 1(1), http://accs.magnumdev.webfactional.com/experiential-learning.
- Swetha B., Raksha P. Rao, Vidhu Rojit and Viraj Kumar, A Low-Cost Classroom Response System, 6th International Conference on Advances in Computing, Communications and Informatics (ICACCI'17), Manipal.

2016

- Manasa H. G., Kavitha G. Puranik, Lakshmi V. Antim and Viraj Kumar, Photocasting: A Low-Cost Technique to Create and Disseminate Digital Lecture Notes, 24th International Conference on Computers in Education (ICCE'16), Mumbai.
- Darshan K. M. and Viraj Kumar, Hybrid ITS for DFA Construction Problems, 24th International Conference on Computers in Education (ICCE'16), Mumbai.
- Aditya Vishwanathan, M. Bhavatarini, Namratha Ravi, Sneha U.B., Srilalitha K. and Viraj Kumar. An Extensible Multilingual Corpus of DFA Construction Problems, Proceedings of the 5th International Workshop on ICT Trends in Emerging Economies (WICTEE'16), Mumbai.
- Suchi Srinivas, Saurabh Khanna, Jeenath Rahaman and Viraj Kumar, Designing a Game-based Learning Environment to Foster Geometric Thinking, 8th IEEE International Conference on Technology for Education (T4E'16), Mumbai.
- Amogh Mishra, Kishan Kishore and Viraj Kumar, An Eclipse Plugin to Assist Learners in Selecting Hash Functions, 8th IEEE International Conference on Technology for Education (T4E'16), Mumbai.
- Vandana Rao, Vaishnavi S., Vaishnavi Kannan and Viraj Kumar, Automatic Identification of Subject Domain in Engineering Examination Questions, 8th IEEE International Conference on Technology for Education (T4E'16), Mumbai.
- Ullas Aparanji and Viraj Kumar, Enabling Classroom Discussions via Programming Assignments, 8th IEEE International Conference on Technology for Education (T4E'16), Mumbai.
- Vidhu Rojit, Sindhu R. Pai, Shruti Kaivalya and Viraj Kumar, Visual Specifications for Web-application Programming Assignments, 8th IEEE International Conference on Technology for Education (T4E'16), Mumbai.
- Sandeep K.V., Shailja Agarwala, Sharath R. and Viraj Kumar, DSAdvisor: Facilitating Deeper Inquiry in the Data Structures Course, 4th International Conference on Learning and Teaching in Computing and Engineering (LaTiCE'16), Mumbai.
- Varun Shenoy, Ullas Aparanji, Sripradha K. and Viraj Kumar, Generating DFA Construction Problems Automatically, 4th International Conference on Learning and Teaching in Computing and Engineering (LaTiCE'16), Mumbai.
- Viraj Kumar and Sateesh Bhat, Customizing and Curating e-Content with VitalStream, Journal of Engineering Education Transformations (ICTIEE'16), Pune.

2015

- Kaushal Mohan, Anoop R. Desai, Ashish M.P. and Viraj Kumar, Enhancing Digital Educational Repositories by Linking Videos and Examinations, 7th IEEE International Conference on Technology for Education (T4E'15), Warangal.
- Adithi G. S., Akshay Adiga, Pavithra K., Prajwal P. Vasisht and Viraj Kumar, Secure, Offline Feedback to Convey Instructor Intent, 7th IEEE International Conference on Technology for Education (T4E'15), Warangal.
- Rajesh K., Rakesh Goudar, Enabling Micro-notes in Moodle for Educational Videos, 7th IEEE International Conference on Technology for Education (T4E'15), Warangal.

- Ananya H A, Akhilesh Hegde I, Akshay G Joshi and Viraj Kumar, Ranking Student Ability and Problem Difficulty using Learning Velocities, International Symposium on Intelligent Systems Technologies and Applications (ISTA'15), Kochi.
- Aishini Sinha, Anupama M. Dhareshwar, L. Saloni Joshi and Viraj Kumar, Mathematics Tutoring Apps for Low-Cost Devices: an Ethnographic Study of Requirements, International Symposium on Women in Computing and Informatics (WCI'15), Kochi.
- Mohammad Ghazanfar and Viraj Kumar, Asymptotic Analysis of Parallel Algorithms: an Experimental Approach, NSF/TCPP Workshop on Parallel and Distributed Computing Education (EduPar'15), Hyderabad.
- Edward Cutrell, Jacki O'Neill, Srinath Bala, B. Nitish, Andrew Cross, Nakull Gupta, Viraj Kumar and William Thies, Blended Learning in Indian Colleges with Massively Empowered Classroom, 2nd ACM Conference on Learning at Scale (L@S'15), Vancouver.

2014

- Vinay Shekhar, Akshata Prabhu, Kavitha Puranik, Lakshmi Antin and Viraj Kumar, JFLAP extensions for Instructors and Students, 6th IEEE International Conference on Technology for Education (T4E'14), Amritapuri.
- Anusha Hegde, Nayanika Ghosh and Viraj Kumar, Multiple Choice Questions with Justifications, 6th IEEE International Conference on Technology for Education (T4E'14), Amritapuri.
- Viraj Kumar, Enhancing Video Lectures with Digital Footnotes, 44th IEEE Conference on Frontiers in Education (FIE'14), Madrid.
- Vinay S. Shekhar, Anant Agarwalla, Akshay Agarwal, Nitish B. and Viraj Kumar, Enhancing JFLAP with automata construction problems and automated feedback, 7th International Conference on Contemporary Computing (IC3'14), Noida.
- Mohammad Ghazanfar and Viraj Kumar, A compendium of parallel algorithms to complement the traditional algorithms course, 1st Indian Symposium on Computer Systems, Bangalore.
- Andrew Cross, B. Ashok, Srinath Bala, Edward Cutrell, Naren Datha, Rahul Kumar, Viraj Kumar, P. Madhusudan, Siddharth Prakash, Sriram Rajamani, Satish Sangameswaran, Deepika Sharma and William Thies, Online Learning versus Blended Learning: An Exploratory Study, 1st ACM Conference on Learning at Scale (L@S'14), Atlanta.

2013

- Priyanka Bansal and Viraj Kumar, A JFLAP extension for checking Context Free Grammars, International Conference on Frontiers in Education: Computer Science and Computer Engineering (FECS'13), Las Vegas.

Selected others

- Sachin Patkar, Viraj Kumar, Bijit Hore and Hardeep Kaur, A Graph Partitioning System for Natural Unbalanced Partitions, WSEAS International Conference on Information and Automation, Tenerife, 2002.
- Viraj Kumar and Mahesh Viswanathan, Conformance Testing in the presence of Multiple Faults, Proceedings of the 16th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA'05), 1136–1145, 2005.
- Nirman Kumar, Viraj Kumar and Mahesh Viswanathan, On the Complexity of Error Explanation, Proceedings of the 6th International Conference on Verification, Model Checking and Abstract Interpretation (VMCAI'05), 448–464, 2005.
- Rajiv Alur, Viraj Kumar, P. Madhusudan and Mahesh Viswanathan, Congruences for Visibly Pushdown Languages, Proceedings of the 32nd International Colloquium on Automata, Languages and Programming (ICALP'05), 1102–1114, 2005.

- Viraj Kumar, P. Madhusudan and Mahesh Viswanathan, Minimization, Learning, and Conformance Testing of Boolean Programs, Proceedings of the 17th International Conference on Concurrency Theory, 203–217, 2006.
- Viraj Kumar, P. Madhusudan and Mahesh Viswanathan, Visibly Pushdown Automata for Streaming XML, 16th International World Wide Web Conference (WWW'07), Banff, 2007.

Invited workshops

- Joint organizer for a one-day *Dialogue on Air Pollution and Health*, Divecha Centre for Climate Change, 2019.
- Lead resource person for over 15 Computer Science Faculty Workshops (Learning Outcomes, Curriculum Design, Introductory Programming, Formal Verification) conducted for iSIGCSE, BITES and IUCEE, 2016-present.
- Enhancing video lectures with micro-notes using a Moodle extension, 6th IEEE International Conference on Technology for Education, Amritapuri, 2014.
- Enhancing JFLAP: extensions for students and instructors, 6th IEEE International Conference on Technology for Education, Amritapuri, 2014.

Professional Service

- Subject Editor (Computer Science) for the journal *Current Science* (2018-present).
- Chair of the ACM India Special Interest Group on Computer Science Education (2019-present). Vice-Chair from 2017-2019.
- Consultant to the Committee to draft the National Education Policy, Government of India (2017-2018).
- Member of the Task Group on Machine Intelligence, Karnataka Knowledge Commission (2016-2017).
- Member Secretary of the Task Group on Educational Technology for Higher Education in Karnataka and EduSat Utilisation Review, Karnataka Knowledge Commission (2014-15).
- Member of the ACM Special Interest Group on Computer Science Education (SIGCSE).
- Member of the International Committee, the 51st ACM Technical Symposium on Computer Science Education (SIGCSE'20).
- Member of CompEd'19 (ACM Global Computing Education Conference) Working Group 1: 1.5 Degrees of Separation: Computer Science Education in the Age of the Anthropocene (2019).
- Member of CompEd'19 (ACM Global Computing Education Conference) Working Group 4: Teaching of computing ethics (2019).
- Program co-Chair of ACM COMPUTE 2018, ACM COMPUTE 2019 and ACM COMPUTE 2020.
- Industry Liaison co-Chair of the 10th IEEE International Conference on Technology for Education (T4E 2019), Program co-Chair of the 8th IEEE International Conference on Technology for Education (T4E 2016) and the 9th IEEE International Conference on Technology for Education (T4E 2018); Workshop Chair of the 7th IEEE International Conference on Technology for Education (T4E 2015).
- Member of the Governing Council, MVJ College of Engineering, Bangalore (2016-present).
- Member of Advisory Board of Computing & Information Sciences, Atria Institute of Technology (2019-present).
- Members for the Board of Studies in the School of Computing, SRM University Chennai (2019-present).

Awards

2016	Microsoft Research/ACM India grant to develop CS instructional resources
2014	TCCP/CDER Early Adopter Award (Supported by NSF/IEEE)
2011	Rose Award for Excellence in Undergraduate Education
2010	Ranked *Outstanding* on the Incomplete List of Teachers
2006/07	Awarded for *Outstanding Services as a Teaching Assistant* (Computer Science)
2000	Recipient of the *Institute Silver Medal*, IIT Bombay