Mahima Agumbe Suresh

Assistant Professor, San José State University   Curriculum Vitae updated October 2019

CONTACT INFORMATION	Department of Computer Engineering One Washington Square San José, CA 95192-0080	mahima.agumbesuresh@sjsu.edu http://www.sjsu.edu/people/mahima.agumbesuresh/ Ph: +1 (979) 529-6320

RESEARCH INTERESTS

Cyber-Physical Systems, Internet of Things, Graph Theory, Stochastic Systems, Optimization, Augmented Reality

EDUCATION

Texas A&M University, College Station   GPA: 3.8/4.0
  Doctor of Philosophy, Computer Science (August 2010 - December 2015)
  Advisor: Dr. Radu Stoleru
  Thesis: A Cyber-Physical Systems Approach to Water Distribution System Monitoring

National Institute of Technology, Karnataka, Surathkal   GPA: 8.6/10
  Bachelor of Technology, Computer Engineering (August 2005 - May 2009)
  Advisor: Dr. Saumya Hegde

JOURNAL PUBLICATIONS

[J.4] W. Gong, **M. A. Suresh**, L. Smith, A. Ostfeld, R. Stoleru, A. Rasekh, M. K. Banks "Mobile Sensor Networks for Optimal Leak and Backflow Detection and Localization in Municipal Water Networks", *Environmental Modelling & Software*, June 2016

[J.3] **M.A. Suresh**, R. Stoleru, W. Zhang, W. Gong, A. Rasekh, M. K. Banks, "Towards Optimal Monitoring of Flow-based Systems using Mobile Wireless Sensor Networks," in *ACM Transactions on Sensor Networks*, May 2015

[J.2] W. Zhang, **M.A. Suresh**, R. Stoleru, H. Chenji "On Modeling the Coexistence of 802.11 and 802.15.4 Networks for Performance Tuning", in *IEEE Transactions on Wireless Communications*, October 2014

[J.1] **M.A. Suresh**, R. Stoleru, E. Zechman, and B. Shihada, "On Event Detection and Localization in Acyclic Flow Networks," in *IEEE Transactions on Systems, Man and Cybernetics: Part A*, May 2013

PEER REVIEWED CONFERENCE PUBLICATIONS

[C.10] P. Venkateswaran, **M. A. Suresh** and N. Venkatasubramanian, "Augmenting In-situ with Mobile Sensing for Adaptive Monitoring of Water Distribution Networks," 10th *ACM/IEEE International Conference on Cyber-Physical Systems (ICCPS)* 2019.

[C.9] K. D. Ortiz-Lopez, **M. A. Suresh**, R. Stoleru, "Transmitters location optimization for drug delivery systems," 5th *ACM International Conference on Nanoscale Computing and Communication (NANOCOM)* 2018.

[C.8] N. Pai, **M. A. Suresh**, J. C. Bose R P, "Analyzing Process Variants to Understand Differences in Key Performance Indices," 29th *International Conference on Advanced Information Systems Engineering (CAiSE)* 2017.

[C.7] W. Zhang, Y. Zhou, **M. A. Suresh**, R. Stoleru, "Performance Analysis and Tuning of Coexisting Duty Cycling WiFi and Wireless Sensor Networks," 14th *IEEE International Conference on Sensing, Communication and Networking (SECON)* 2017.

[C.6] W. Zhang, **M.A. Suresh**, Y. Zhou, R. Veera, R. Stoleru "On the Coexistence of 802.11 and 802.15.4 Networks with Delay Constraints", 34th *IEEE International Performance Computing and Communications Conference (IPCCC)* 2015.

[C.5] W. Zhang, Y. Zhou, **M. A. Suresh** and R. Stoleru, "On Modeling Single-cell IEEE 802.11 Ad-Hoc Network with Power Saving Mode" 11th *IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)* 2015.

[C.4] **M. A. Suresh**, U. Manohar, Anjana G. R, R. Stoleru, M. Kumar. M. S., "A Cyber-Physical System for Continuous Monitoring of Water Distribution Systems" 10th *IEEE International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob)* 2014.

[C.3] **M. A. Suresh**, L. Smith, A. Rasekh, R. Stoleru, M. K. Banks, B. Shihada, "Mobile Sensor Networks for Leak and Backflow Detection in Water Distribution Systems" 28th *IEEE International Conference on Advanced Information Networking and Applications (AINA)* 2014.

[C.2] W. Zhang, **M.A Suresh**, R. Stoleru, "On Modeling the Coexistence of WiFi and Wireless Sensor Networks", 10th *IEEE International Conference on Mobile Ad-hoc and Sensor Systems (MASS)* 2013.

[C.1] **M.A. Suresh**, R. Stoleru, R. Denton, E. Zechman, B. Shihada, "Towards optimal event detection and localization in acyclic flow networks," 13th *International Conference on Distributed Computing and Networking (ICDCN)* 2012.

PATENTS

[P.1] S. Bhattacharya, **M. A. Suresh**, S. Banerjee, S. Eswaran, T. Mukherjee, T. Redmond, and K. Dasgupta, "Mixture model based Time-series Clustering of Crime data across spatial entities,"

SUBMITTED PAPERS

[1] **M. A. Suresh**, U. Manohar, Anjana G. R, R. Stoleru, M. Kumar. M. S., P. Barooah, A. Ostfeld, "A Cyber-Physical System for Water Distribution System Monitoring," Under review

[2] A. Mokadam, **M. A. Suresh**, "DoSSAD - Leveraging Domain Specific Semantics in Aspect Detection for Product Design" Under review

[3] S. Danda, **M. A. Suresh**, "SaFeR - A *Sa*fety *F*ramework for *e*-Scooter *R*iders" Under review

PROFESSIONAL EXPERIENCE

San José State University   Type: Academia
    Assistant Professor (Aug 2018 - Present)
    Department of Computer Engineering

Texas A&M University   Type: Academia
    Visiting Assistant Professor (Mar 2017 - Aug 2018)
    Department of Computer Science and Engineering

Xerox Research Center India   Type: Industry
    Post Doctoral Researcher (Feb 2016 - Dec 2016)
- Process Mining: Comparison of Process Variants
    - Developed algorithms to compare two or more process variants annotated with different types of data, and extract insights from the comparison
    - Implemented an intuitive, interactive, scalable, and flexible framework to analyze and present the comparison
- Crime Analytics
    - Performed data analytics on crime data to identify regions that are similar to each other in crime rate, arrest rate, and crime mitigation strategies
    - Inferred operational insights from crime data to provide prescriptions to the police on enforcement techniques that have impacted crime and arrest numbers
    - Patent Application Filed: "CriMeClusT: Mixture model based Time-series Clustering of Crime data across spatial entities," 2016
- Qualitative Health State Analytics
    - Designed a framework that provides simple and intuitive summary of the health state of a user based on data collected from wearable sensors

Texas A&M University   Type: Academic
    Graduate Assistant - Research (August 2011 - Present)
    Advised by Dr. Radu Stoleru in the Department of Computer Science and Engineering
- A Cyber-Physical Systems Approach to Water Distribution System Monitoring
  - Designed algorithms for optimal event detection and localization, flow learning, MAC and group communication protocols, and flow control in water distribution systems, and flow-based systems in general
  - Developed and maintained a C++ simulator that uses inputs from EPANET (a software to model Water Distribution System hydraulics) to simulate the movement of the sensors and communication among sensors and beacons in the Cyber-Physical System
- Co-existence of wireless technologies
  - Performed analytical modeling and model validation of MAC layer protocols for technologies such as 802.11, BMAC, Zigbee, and modeled their co-existence through a Markov Chain model of the channel
  - Developed an algorithm based on game theory concepts to tune parameters to improve the throughput of the coexisting technologies.

Intel Corporation, Hillsboro, OR   Type: Industry
    Software Intern Graduate Level (May 2014 - August 2014)
- Intel Common Connectivity Framework for Chrome browser
  - Appointed as software development intern in device-device connectivity and related proof of concepts
  - Ported Intel's Common Connectivity Framework to Google Chrome browser using Native Client and pepper API

Texas A&M University   Type: Academic
    Graduate Assistant - Research (January 2011 - August 2011)
    Advised by Dr. Ana Goulart in the Department of Engineering Technology and Industrial Distribution
- Experiments with SIP over TLS in the NG-9-1-1 testbed
  - Implemented secure call setup using SIP protocol over TLS and HTTPs towards an enhanced emergency call system
  - Maintained and enhanced the SIP-based VoIP emergency calling service testbed, NG-9-1-1, a program initiated by the National Emergency Number Association organization

Goldman Sachs Services Pvt Ltd, Bengaluru, India   Type: Industry
    Analyst (June 2009 - August 2010)
- Analyst Developer
  - Developed a GUI application on Visual C# and proprietary build frameworks, and integrated it with the proprietary trading database and in-house data warehouse
  - Trained for 12 weeks in C++, Java, DB2, Sybase, design patterns, coding practices, capital markets, XML, and OOAD

TEACHING AND MENTORING EXPERIENCE

San José State University
- Instructor
  Undergraduate course - CMPE 130 Advanced Algorithm Design (Fall 2019)
  - Core course in computer engineering
  - Responsible for delivering lectures, exams, quizzes, and grading for ~ 30 students
  Graduate course - CMPE 206 Computer Network Design (Fall 2019)
  - Responsible for delivering lectures, exams, quizzes, and grading for ~ 20 students
  Graduate course - CMPE 257 Machine Learning (Spring 2019)
  - High-demand course in computer engineering for Artificial Intelligence specialization
  - Responsible for delivering lectures, exams, quizzes, and grading for ~ 50 students
  Undergraduate course - CMPE 126 Algorithms and Data Structure Design (Fall 2018)
  - Core course in computer engineering with a lab component to provide hands-on experience
  - Responsible for delivering lectures, exams, quizzes, and grading for ~ 60 students

Texas A&M University
- Instructor
  Graduate course - CSCE 689 Cloud Computing (Spring and Summer 2018)
    - Web-based course co-taught with Dr. Dilma Da Silva
    - Responsible for preparing video lectures, research paper discussions, projects, quizzes, and grading for 50 students

  Undergraduate course - CSCE 482 Senior Capstone Design (Spring 2018)
    - Project-oriented engineering design course
    - Responsible for managing and guiding 28 students in 6 groups through a software project with focus on design methodology, management process, and teamwork
  Undergraduate course - CSCE 489 Cloud Computing (Summer and Fall 2017, Summer 2018)
    - Online course (Summer 2017) and web-based course (Fall 2017) co-taught with Dr. Dilma Da Silva
    - Responsible for preparing video lectures, projects, quizzes, and grading for 18 students in Summer and 92 students in Fall

  Undergraduate course - CSCE 464 - Wireless and Mobile Systems (Fall 2017)
    - Responsible for delivering lectures, preparing assignments and exams for 60 students
    - Introduced ns-3 simulations as part of the course
    - Restructured the course to include more mobile networking concepts and cellular network technologies

- Teaching Assistant
  Undergraduate course - CSCE 181 Introduction to Computing (Fall '12)
  Undergraduate course - CSCE 481 Seminar (Fall '12)
    - Responsible for holding office hours and grading 6 short reports, 1 long report each, and attendance for over 250 students

- Student Research Mentor
  Department of Computer Science and Engineering, Texas A&M University
    - Chih-Peng Wu for his research in Edge Computing
  Laboratory of Embedded and Networked Sensor Systems (LENSS), Texas A&M University
    - Keishla Ortiz-Lopez for her research in Medical Cyber-Physical Systems
    - Liuyi Jin for his research in Oil&Gas exploration
    - Wei Zhang for his research in Wireless Coexistence
    - Weijiao Gong for her research in Cyber Physical Systems

AWARDS AND
GRANTS

Undergraduate Research Grant (URG) from the Office of Research at San José State University

Travel Grant (Sponsored by USENIX), USENIX Annual Technical Conference (ATC), 2017

Student Travel Grant (Sponsored by National Science Foundation), 12th IEEE International Conference on Mobile Ad hoc and Sensor Systems (MASS), 2015

Student Travel Grant (Sponsored by National Science Foundation), Cyber Physical Systems Week (CPS Week), 2015

Student Travel Grant (Sponsored by National Science Foundation), 9th ACM Conference on Embedded Networked Sensor Systems (SenSys), 2011

Recipient of National Talent Scholar Scholarship, The National Council of Educational Research and Training (NCERT), Government of India, 2003

TALKS

TALKS AND POSTER PRESENTATIONS

[TK.13] "Visualizing differences in process variants," University of California, Merced, 2019

[TK.12] "Flow-Based Cyber-Physical Systems," Indian Institute of Science, Bangalore, India, 2019

[TK.11] "N2Women meeting," 14th IEEE International Conference on Sensing, Communication and Networking (SECON), 2017

[TK.10] "Tackling Communication and Control Challenges for Cyber Physical Infrastructures," Indian Institute of Technology, Hyderabad, India, 2016

[TK.9] "Flow-based Cyber-Physical Systems," NSF Principal Investigators Meet, Washington D.C, U.S.A., 2015

[TK.8] "Flow-based Cyber-Physical Systems," NSF Principal Investigators Meet, Washington D.C, U.S.A., 2014

[TK.7] "Flow-based Cyber-Physical Systems," NSF Principal Investigators Meet, Washington D.C, U.S.A., 2013

[TK.6] "Flow Sensor Networks to monitor Water Distribution Systems," Graduate Cohort Workshop, CRA-W, Boston, U.S.A., 2013

[TK.5] "Flow-based Cyber physical systems," Industrial Affiliate Program, Texas A&M University, U.S.A., Sep 2012

[TK.4] "Flow Sensor Networks for Oil & Gas Exploration," Industrial Affiliate Program, Texas A&M University, U.S.A., Mar 2012

[TK.3] "Towards Optimal Event Detection and Localization in Acyclic Flow Networks," Industrial Affiliate Program, Texas A&M University, U.S.A., Sep 2011

[TK.2] **M.A. Suresh**, U. Manohar, Anjana G. R, R. Stoleru, M. Kumar. M. S., "A cyber-physical system for continuous monitoring of Water Distribution Systems". IEEE 10th International Conference on Wireless and Mobile Computing, Networking and Communications (WiMob '14)

[TK.1] **M.A. Suresh**, A. Goulart, U. Desai, and W. Magnussen, "Experiments with SIP over TLS in an NG-9-1-1 testbed,". 5th International Conference on Principles, Systems and Applications of IP Telecommunications (IPTcomm '11)

PROFESSIONAL
ACTIVITIES

PEER REVIEWER

Technical Program Committee:
    IPDPS 2019
    MASS 2018, 2019
    COMSNETS 2018, 2019, 2020
    DSFES 2020
    BDS 2020
    ICC 2018, Ad-Hoc and Sensor Networking Symposium
    Graduate Forum - COMSNETS 2016
    IPSN 2015 (Member of Shadow Program Committee)
Conference Reviewer:
    IEEE INFOCOM 2012, 2013, 2015
Journal Reviewer:
    IEEE Access
    IEEE Transactions on Wireless Communications
    IEEE Transactions on Systems, Man and Cybernetics: Systems
    IEEE Sensors
    IEEE AdHoc Networks
    IEEE Transactions on Industrial Informatics
    Elsevier Computer Methods and Programs in Biomedicine
    MDPI Sensors, Algorithms, Games, Electronics, Future Internet, Symmetry, and Computers

SERVICE

Faculty Member of Student Fairness Committee under the Academic Senate at San José State University

Judge, Mathematics and Computer Science/Engineering and Physics & Astronomy, Texas Junior Science and Humanities Symposium, 2015

Judge, Mathematics and Computer Science/Engineering, Texas Junior Science and Humanities Symposium, 2014

MEMBERSHIP

Membership Co-chair of Networking Networking Women (N^2 Women) community

Professional Member of ACM, IEEE, and USENIX