

PARITOSH P. RAMANAN

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RESEARCH INTERESTS	<i>Methodology:</i> Decentralized Optimization, Distributed Computing, Asynchronous Computation, Large Scale Mixed-Integer Optimization <i>Applications:</i> Blockchain Based Decentralized Applications (dApps), Federated Machine Learning, Cyber Physical Systems, Power Systems, Data Privacy and Security	
EDUCATION	Georgia Institute of Technology , Atlanta, GA Ph.D., Computational Science and Engineering Expected: Summer 2020 <ul style="list-style-type: none">Thesis Title: <i>Decentralized Optimization for Large Scale Power Systems</i><ul style="list-style-type: none">Scalable, asynchronous, multi-threaded decentralized solutions of Mixed Integer problems.Blockchain based, data privacy preserving, decentralized cyber attack detection mechanisms.Advisors: Nagi Z. Gebraeel and Edmond Chow Georgia State University , Atlanta, GA M.S., Computer Science August 2015 <ul style="list-style-type: none">Thesis Title: <i>INDIGO: An In-Situ Distributed Gossip System Design and Evaluation</i><ul style="list-style-type: none">Design, development of a seismic tomography testbed with BeagleBone Black and XBee radios.Participated in field deployment and evaluation on Llaima volcano, Chile.Advisor: WenZhan Song Birla Institute of Technology and Science-Pilani, Goa Campus , Goa, India M.Sc(Tech), Information Systems August 2013	
JOURNAL PUBLICATIONS	[1] Ramanan P. , Yildirim M., Chow E., and Gebraeel N. "An Asynchronous, Decentralized Solution Framework for the Large Scale Unit Commitment Problem" <i>IEEE Transactions on Power Systems</i> , 34 (5), 3677-3686, Sept. 2019. [2] Ramanan, P. , Kamath G. and Song WZ. "INDIGO: An In Situ Distributed Gossip Framework for Sensor Networks." <i>International Journal of Distributed Sensor Networks</i> , 11(10), 76-83, Oct 2015	
CONFERENCE PUBLICATIONS	[1] Ramanan P. , Yildirim M., Chow E., and Gebraeel N. "Asynchronous Decentralized Framework for Unit Commitment in Power Systems" <i>International Conference on Computational Science (ICCS 2017)</i> , Zurich, Switzerland, June 2017 (acceptance ratio: 0.25) [2] Kamath G., Ramanan P. and Song WZ. "Distributed Randomized Kaczmarz and Applications to Seismic Imaging in Sensor Network" <i>IEEE International Conference on Distributed Computing in Sensor Systems (IEEE DCOSS)</i> Fortaleza, Brazil, May 2015 [3] Ramanan P. , Kamath G. and Song WZ. "NetTomo: A Tomographic Approach towards Network Diagnosis" <i>IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks (IEEE WoWMoM)</i> Boston, MA, June 2015 (acceptance ratio: 0.21) [4] Kamath G., Song WZ., P. Ramanan , Shi L. and Yang J., "DRISTI: Distributed Real-Time In-Situ Seismic Tomographic Imaging" <i>IEEE International Conference on Ubiquitous Computing and Communication (IEEE IUCC)</i> Liverpool, UK, October 2015 [5] Ramanan P. , Gaikwad P., and Vidyadharan S. "Achieving connectivity in an Unstructured Wireless Sensor Network using Optimal Assignment of Mobile Nodes" <i>International Conference on Networking (ICN)</i> 2013, Seville, Spain, Jan 2013	

PREPRINTS/ SUBMITTED WORKS	<p>[1] <u>Ramanan P.</u>, Yıldırım M., Gebraeel N. and Chow E. “A Decentralized Multithreaded Maintenance Optimization framework for Large Scale Power Systems” submitted to <i>IEEE Transactions on Power Systems</i></p> <p>[2] <u>Ramanan P.</u>, Li D. and Gebraeel N. “A Decentralized Blockchain based Cyber ThreatDetection for Power Systems” submitted to <i>IEEE Transactions on Smart Grid</i></p> <p>[3] <u>Ramanan P.</u>, Nakayama K. and Sharma R. “BAFFLE : Blockchain based Aggregator Free Federated Learning” <i>Systems and Machine Learning (SysML 2020)</i>, arXiv preprint arXiv:1909.07452</p> <p>[4] Glusa C., <u>Ramanan P.</u>, Boman EG. and Rajamanickam S. “Asynchronous One-Level and Two-Level Domain Decomposition Solvers,” arXiv preprint arXiv:1808.08172</p>
WORK IN PROGRESS	<p>[1] <u>Ramanan P.</u>, Yıldırım M., Chow E., and Gebraeel N. “Asynchronous Decentralized Multithreaded Large scale joint operations and maintenance”</p> <p>[2] <u>Ramanan P.</u>, Li D. and Gebraeel N. “Aggregator Free Privacy Preserving Federated Learning for RNNs for Remaining Useful Lifetime Prediction”</p>
HONORS AND AWARDS	<ul style="list-style-type: none"> • Recipient of the Sam Nunn Security Program(SNSP) Fellowship 2019-2020 <ul style="list-style-type: none"> • Conducted research on application of decentralized blockchain and machine learning for cyber security deterrence and preparedness with respect to the U.S. power grid. • Delivered a talk entitled <i>Conflict Reduction and Deterrence in the Power Grid of the Future: A Cyber Security Perspective</i> at the Special Operations Command Centre (SOCOM) of the United States Department of Defense in Tampa FL. • Delivered briefings on technical aspects of multi-modal cyber security threats faced by the US power grid system to: <ul style="list-style-type: none"> • Fmr. Deputy Secretary of Energy, Dr. Elizabeth Sherwood-Randall • Fmr. Vice Chairman of the Joint Chiefs of Staff, Retd. Admiral James Alexander Winnefeld Jr. • Fmr. Supreme Allied Commander Europe (SACEUR) of NATO Allied Command Operations, Retd. General Philip Mark Breedlove
INDUSTRY EXPERIENCE	<p><u>Graduate Research Intern,</u> (Summer 2019) Energy Management Division, NEC Laboratories America, San Jose, CA <i>Blockchain based Decentralized Federated Learning</i>, Mentor: Dr. Kiyoshi Nakayama</p> <p><u>Graduate Summer Research Intern,</u> (Summer 2017) Computer Science Research Institute, Sandia National Laboratories, Albuquerque, NM <i>Asynchronous Iterative Linear Solvers</i>, Mentor: Dr. Siva Rajamanickam</p>
SERVICE	<ul style="list-style-type: none"> • Session Chair : Addressing Computation and Market Integration Challenges in Power Systems, INFORMS Annual Meeting 2019. • Reviewer: IEEE Transactions on Power Systems.
GRADUATE COURSEWORK	<ul style="list-style-type: none"> • <i>Computational Science</i>: High Performance Computing, High Performance Parallel Computing, Numerical Linear Algebra, Iterative Methods for Linear and Non-Linear Systems • <i>Computer Science (Systems)</i>: Blockchain and Cryptocurrencies, Wireless Sensor Networks, Optical Networks, Operating Systems, Computer Organization and Architecture, Computer Networks, Database Systems and Applications. • <i>Computer Science (Theory)</i>: Machine Learning, Data Structures and Algorithms, Discrete Math, Theory of Automata, Programming Languages. • <i>Operations Research</i>: Linear Optimization, Integer Optimization, Theoretical Statistics
TEACHING EXPERIENCE	<p><u>Teaching Assistant:</u></p> <ul style="list-style-type: none"> • ISyE3770: Statistics and Applications (Fall 2015), Georgia Tech • CS C313/IS C313 : Object Oriented Programming and Design (Fall 2012), BITS-Pilani, Goa

- PRESENTATIONS
- Decentralized Multithreaded Maintenance For Large Scale Power Systems, INFORMS Annual Meeting 2019, October 20-23, Seattle, WA
 - Decentralized Asynchronous Framework for Large Scale Power System Planning Problems, IISE 2019 Annual Meeting, May 19-21, Orlando, FL
 - Asynchronous Decentralized Framework for Unit Commitment in Power Systems, SIAM CSE 2019, Feb 25-Mar 1, Spokane, WA
 - Asynchronous Large-scale Decentralized Unit Commitment, INFORMS Annual Meeting 2018, November 4-7, Phoenix, AZ
 - ACHILES: An Asynchronous Iterative Linear Solver, SIAM Parallel Processing 2018, March 7-10, 2018, Tokyo, Japan
 - Scalable static deployment pattern for WSNs, ICICIC 2012, Dec 2012, Chennai, India

- REFERENCES
- Nagi Z. Gebraeel
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- Edmond Chow
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