

Anit Kumar Sahu

CONTACT INFORMATION

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EDUCATION

Carnegie Mellon University

Pittsburgh, PA

PhD, Electrical and Computer Engineering

June 2013 - Nov 2018

– Thesis: Inference and Optimization over Networks: Communication Efficiency and Optimality

Indian Institute of Technology, Kharagpur

Kharagpur, India

B.Tech and M.Tech(Dual Degree),

Electronics and Communication Engineering,

Jul 2008 - May 2013

– GPA: 9.28/10.00

INTERNSHIP EXPERIENCE

Yahoo! Research: Intern Scientist

Sunnyvale, CA

Supervisor: Narayan Bhamidipati

May 2017 - Aug 2017

Developed a margin management scheme for Real Time Bidding with campaign efficiency management for post install conversions.

Designed a novel state-space approach and short term reward function to learn a deterministic policy using Q-learning.

Bosch RTC¹: Machine Learning & Control Theory Research Intern Pittsburgh, PA

Supervisor: Jon Francis

May 2016 - Aug 2016

Developed data-driven inference models for the evolution of different environmental modalities with occupancy count as a disturbance.

Designed smart control schema based on the data-driven models to provide for user comfort while keeping the energy constraint in mind.

RESEARCH PUBLICATIONS

Journal Papers

- J1 A.K. Sahu and S. Kar, Distributed Expert Assisted Online Learning: Sequence Prediction, In Preparation, To be submitted to *IEEE Transactions on Signal Processing*.
- J2 A.K. Sahu, D. Jakovetic, D. Bajovic and S. Kar, Communication-Efficient Distributed Strongly Convex Stochastic Optimization Over Networks: Non-Asymptotic Rates., Under review in *IEEE Transactions on Automatic Control*. Initial Submission: August 2018
- J3 A.K. Sahu, D. Jakovetic, D. Bajovic and S. Kar, Communication Efficient Distributed Weighted Non-Linear Least Squares Estimation, *EURASIP Journal on Advances in Signal Processing*, December 2018
- J4 A.K. Sahu, D. Jakovetic and S. Kar, *CTRF*: A Distributed Random Fields Estimator, *IEEE Transactions on Signal Processing*. Vol:66, Issue 18, pp. 4980-4995.
- J5 A.K. Sahu, D. Jakovetic and S. Kar, Communication optimality trade-off for distributed estimation, under review in *Journal of Machine Learning Research*. Initial Submission: January 2018
- J6 A.K. Sahu, S. Kar, J.M.F. Moura and H.V. Poor, Distributed Constrained Recursive Nonlinear Least-Squares Estimation : Algorithms and Asymptotics, *IEEE Transactions on Signal and Information Processing over Networks: Special issue on Inference and Learning over Networks*. Vol:2, Issue 4, pp. 426-441, 2016
- J7 A.K. Sahu and S. Kar, Recursive Distributed Detection for Composite Hypothesis Testing: Nonlinear Observation Models in Additive Gaussian Noise, *IEEE Transactions on Information Theory*, Vol:63, Issue 8, pp. 4797-4828, 2017.

¹Research and Technology Center

- J8 A.K. Sahu and S. Kar, Distributed Sequential Detection for Gaussian Shift-in-Mean Hypothesis Testing, *IEEE Transactions on Signal Processing*. Vol:64, Issue 1, pp. 89-103, 2016.

Conference Papers

- C1 A.K. Sahu, D. Jakovetic, D. Bajovic and S. Kar, Communication Efficient Distributed Estimation over Directed Random Graphs, Under review in ICASSP 2019
- C2 A.K. Sahu, M. Zaheer and S. Kar, Towards Gradient Free and Projection Free Stochastic Optimization, In Proceedings of *22nd International Conference on Artificial Intelligence and Statistics (AISTATS)* 2019
- C3 A.K. Sahu, D. Jakovetic, D. Bajovic and S. Kar, Non-Asymptotic Rates For Communication Efficient Distributed Zeroth Order Strongly Convex Optimization, In Proceedings of *IEEE Global Conference on Signal and Information Processing, GlobalSIP 2018*.
- C4 D. Jakovetic, D. Bajovic, A.K. Sahu and S. Kar, Convergence rates for distributed stochastic optimization over random networks, In Proceedings of *57th IEEE Conference on Decision and Control, CDC 2018*.
- C5 A.K. Sahu, D. Jakovetic, D. Bajovic and S. Kar, Distributed Zeroth Order Optimization Over Random Networks: A Kiefer-Wolfowitz Stochastic Approximation Approach, In Proceedings of *57th IEEE Conference on Decision and Control, CDC 2018*.
- C6 A.K. Sahu, D. Jakovetic and S. Kar, Communication Efficient Distributed Estimation, To appear in *International Symposium on Information Theory, ISIT 2018*.
- C7 D. Bajovic, D. Jakovetic, A.K. Sahu, and S. Kar, Large Deviations for Products of Non-i.i.d. Stochastic Matrices with Application to Distributed Detection, To appear in *International Symposium on Information Theory, ISIT 2018*.
- C8 A.K. Sahu, S. Mishra and N. Bhamidipati, Managing app install ads in RTB: A Q-learning approach, under review at *IEEE International Conference on Data Engineering, ICDE 2018*.
- C9 Z. Jiang, J. Francis, A.K. Sahu, S. Munir, C. Shelton, A. Rowe and M. Berges, Data-driven Thermal Model Inference with ARMAX, in Smart Environments, based on Normalized Mutual Information, In Proceedings of *American Control Conference, ACC 2018*.
- C10 A.K. Sahu, and S. Kar, Dist-Hedge: A partial information setting based distributed non-stochastic sequence prediction algorithm, In Proceedings of *IEEE Global Conference on Signal and Information Processing, GlobalSIP 2017*.
- C11 S. Kar, R. Negi, M. Mahzoon and A.K. Sahu, Queue-based Broadcast Gossip Algorithm for Consensus, In Proceedings of *54th Annual Allerton Conference on Communication, Control, and Computing*, 2016.
- C12 A.K. Sahu, and S. Kar, Distributed Online Learning: A consensus+innovations approach, In Proceedings of *IEEE Global Conference on Signal and Information Processing, GlobalSIP 2016*.
- C13 A.K. Sahu and S. Kar, Distributed Composite Hypothesis Testing : Imperfect Communication, In Proceedings of *International Symposium on Information Theory, ISIT 2016*.
- C14 A.K. Sahu and S. Kar, Distributed Generalized Likelihood Ratio Tests : Fundamental Limits and Tradeoffs, In Proceedings of *41st IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP 2016, Shanghai*.
- C15 A.K. Sahu and S. Kar, Distributed Sequential Detection for Gaussian Binary Hypothesis Testing: Heterogeneous Networks, In Proceedings of *Asilomar Conference on Signals, Systems and Computers 2014*.

Teaching Assistant: 18202 Math. Found. of Electrical Engineering Fall 2015
 Weekly two recitations, one tutorial and office hours for a sophomore-level course.
 Teaching Assistant: 18202 Math. Found. of Electrical Engineering Spring 2016
 Weekly two recitations, one tutorial and office hours for a sophomore-level course.
 Teaching Assistant: 18898 Data Science: Networks Perspective Fall 2016
 Preparing the course material and giving lectures for a PhD-level course.
 Teaching Assistant: 18202 Math. Found. of Electrical Engineering Spring 2017
 Weekly two recitations, one tutorial and office hours for a sophomore-level course.
 Teaching Assistant: 18771 Linear Systems Fall 2017
 Weekly recitations, office hours, preparing homeworks and exams for a graduate-level course.
 Teaching Assistant: 18202 Math. Found. of Electrical Engineering Spring 2018
 Weekly two recitations and office hours for a sophomore-level course.

ACADEMIC ACHIEVEMENTS AWARDS AND SCHOLARSHIPS

- Awarded the Carnegie Institute of Technology Dean’s Fellowship for the academic session 2013-14.
- Awarded the best M.Tech project award for my Master’s Thesis at IIT Kharagpur.
- Letter of commendation from the Dean Undergraduate Studies, IIT Kharagpur for securing a perfect 10.0 GPA in my 9th semester.
- **Jagadish Bose National Science Talent Search(JBNSTS)** scholarship,2008
- Ranked **11th,9th,5th and 1st** in state in Regional Mathematics Olympiad(**RMO**) for four consecutive years from Grade 8 to Grade 11 in the years 2003,2004,2005 and 2006 & participated in Indian National Mathematics Olympiad (**INMO**) 2004,2005,2006 and 2007.

SKILLS AND COURSEWORK

Programming Languages and Tools: Python, MATLAB, R, TensorFlow, Keras, C, Perl, Hadoop, MapReduce, Pig, Hive

Relevant Courses Taken: Statistical Machine Learning², Estimation, Detection and Identification, Information Theory, Intermediate Statistics*, Linear Systems, Real Analysis, Information flow in Networks, Compressive Sensing, Advanced Introduction to Machine Learning*, Information Processing and Learning*, Deep Reinforcement Learning and Control*, Convex Optimization*

²* Courses taken from Machine Learning Department