Suchismit Mahapatra

Research Scientist · (Machine Learning | Deep Learning)

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About Me

I am a Research Scientist with Amobee Research, applying different Machine/Deep Learning and Optimization techniques to solve related problems. I completed my PhD with the Machine Learning and Data Science Research group at University of Buffalo. I have 7+ years of research and 5 years of developer experience during which I have been exposed and worked on a variety of problems.

Research Interests

Predominantly my area of research is in large scale Machine/Deep Learning. Specifically my research focuses on designing and implementing novel algorithms that take advantage of modern hardware to enable learning. My research interests include:

- Machine/Deep Learning
- Deep Graph/Geometric Learning
- Nonlinear/Distributed Optimization
- Parallel Computing

Academic Background

University of Buffalo, The State University of New York — *Buffalo, NY*

Ph.D. in Computer Science and Engineering — *April 2012 - June 2018*

- Topic: Scalable Nonlinear Spectral Dimensionality Reduction methods for streaming data.
- Advisors: Varun Chandola, Nils Napp & Jaroslaw Zola | GPA: 4.0 out of 4.0 (Transcript)

University of Buffalo, The State University of New York — *Buffalo, NY*

M.S. in Computer Science and Engineering — *September 2010 - June 2012*

- Topic: A Cold Start Recommendation System Using Item Correlation and User Similarity.
- Advisor: Rohini Srihari | GPA: 4.0 out of 4.0 | Department rank: 1 out of 555 (Transcript)

National Institute of Technology, Rourkela — *Rourkela, India*

B.Tech. in Computer Science and Engineering — *August 2001 - May 2005*

- Specialization: Discrete Mathematics and Algorithms
- Cumulative Score: 77% (First class with Honors)(Transcript) | Joint Entrance Exam Rank 22 out of 400,000

Honors

2021	Became a reviewer for ICML 2021 and ACL 2021.	*Sunnyvale, CA*
2020	Became a reviewer for ICLR 2021.	*Sunnyvale, CA*
2020	Was invited to and attended the prestigious Theory of Reinforcement Learning program.	*Berkeley, CA*
2019	Became a reviewer for ICML 2020.	*Palo Alto, CA*
2019	Was invited to and attended the prestigious Foundations of Deep Learning program.	*Berkeley, CA*
2017	Won a NSF Junior Researcher Award to attend CBMS Conference on Sparse Recovery.	*Las Cruces, NM*
2016	Became a NVIDIA GPU Educator.	*Santa Clara, CA*
2015	Won a NSF Student Travel Award to attend IEEE Big Data 2015.	*Santa Clara, CA*
2013	Won a rare Research Assistant-ship covering my second year as a Masters student.	*Buffalo, NY*
2004	Scored 99 percentile in Zonal, Discipline and National categories of National IT Aptitude Test.	*Rourkela, India*
2004	Subsequently won a Bhavishya Jyoti Scholarship for above.	*Rourkela, India*

Skills & Proficiencies

Python | PyTorch | C/C++ | TensorFlow | Apache MapReduce | Scala | CUDA | Hive

Research Experience

Amobee Research — *Redwood City, CA*

Scientist I — *March 2020 - Present*

- Developed a novel bidding strategy based on Win Price (WP) estimation
  - Developed and productionized a novel bidding strategy using nonlinear ML based approaches for estimating WP.
- Built a Factorization Machine (FM) based ML pipeline
  - Led efforts to build a FM based ML pipeline for usage in production.

Criteo Research — *Palo Alto R&D Center, CA*

Research Scientist — *July 2018 - December 2019*

- Improve Click-through and Sales prediction
  - Enhanced existing production Click-through and Sales prediction pipeline using nonlinear ML techniques. Improved stability of our new models significantly from +50% to +5%. A/B test using new models resulted in +3-6% uplift in long-term RexT on all platforms.
- Theoretical aspects on Deep Learning (working with Noureddine El Karoui)
  - Working towards understanding kernel and manifold specific aspects of theoretical deep learning.
- Resolving the posterior-collapse issue in Seq2Seq learning
  - Developed quantization based approaches towards resolving the posterior-collapse issue.

The Research Foundation for SUNY — *Buffalo, NY*

Research Assistant — *January 2018 - May 2018*

- Parallelized Hierarchical Clustering (worked with Haimonti Dutta)
  - Worked towards developing a novel parallel hierarchical clustering algorithm using activization strategies.
- Kernel Manifold Learning (worked with Varun Chandola)
  - Developed novel Manifold Learning techniques motivated from Gaussian Processes.

Criteo Research — *Palo Alto R&D Center, CA*

Research Scientist Intern — *September 2017 - December 2017*

- Efficient Domain Adaptation (worked with Suju Rajan)
  - Understanding how to efficiently deal with the Domain Adaptation problem via Optimal Transportation.

Criteo Research — *Palo Alto R&D Center, CA*

Research Scientist Intern — *May 2017 - August 2017*

- Cross-domain Query-Product (QP) modeling using Adversarial Transfer Learning (worked with Suju Rajan)
  - Tried to learn a robust QP model across retailer domains using Adversarial Transfer Learning.

The Research Foundation for SUNY — *Buffalo, NY*

Research Assistant — *January 2017 - May 2017*

- Representation learning via DL/NLSDR methods (worked with Varun Chandola / Nils Napp / Jaroslaw Zola)
  - Interpreting complex nonlinear processes using DL/NLSDR methods.
- Incorporating complex constraints for sparse Logistic Regression (worked with Varun Chandola)
  - Worked towards solving the sparse Logistic Regression problem with hierarchical tree-based constraints.

BD Biosciences — *San Jose, CA*

Machine Learning Algorithm Design Intern — *June 2016 - August 2016*

- Fast Clustering of Flow Cytometry (FC) data
  - Upscaled BD's clustering framework for high dimensional FC data upto ~16x.

University of Buffalo, The State University of New York — *Buffalo, NY*

Research Assistant — *June 2013 - December 2015*

- Nonlinear Spectral Dimensionality Reduction (worked with Varun Chandola / Jaroslaw Zola / Nils Napp)
  - Developed scalable Nonlinear Spectral Dimensionality Reduction methods in a streaming setting.
- Social Network Modeling (worked with Varun Chandola)
  - Developed the xKPGM model for social network modeling.
- Variance Reduction techniques in Distributed Optimization (worked with Haimonti Dutta / Varun Chandola)
  - Worked towards developing novel variance reduction techniques for the ERM problem.
- Understanding Rumor Propagation in Social Networks (worked with Shambhu Upadhyaya / Varun Chandola)
  - Worked towards modeling rumor propagation in social networks.
- Volcanic Flow Prediction (worked with Abani Patra / Varun Chandola / Paul Bauman)
  - Developed a novel Gaussian Process based model for prediction of flow using GPGPUs.

The Research Foundation for SUNY — *Buffalo, NY*

Research Assistant — *June 2011 - August 2012*

- Localization via Entropy Reduction (worked with Robert Platt)
  - Developed a novel active localization technique via sequential reduction of entropy using OpenRAVE/ROS.

Publications

1. Efficient Graph Similarity Computation via Optimal Transport. Khoa Doan, Saurav Manchanda, **Suchismit Mahapatra** and Chandan Reddy. 2020 (Under submission)
2. Discretized Bottleneck in VAE: Posterior-Collapse-Free Sequence-to-Sequence Learning. Yang Zhao, Ping Yu, **Suchismit Mahapatra**, Qinliang Su and Changyou Chen. 2020 (Under submission)

3. Learning Manifolds from Non-stationary Streaming Data. **Suchismit Mahapatra** and Varun Chandola. 2019 (Under submission)
4. S-Isomap++: Multi Manifold Learning from Streaming Data. **Suchismit Mahapatra** and Varun Chandola. Proceedings of 5th IEEE International Conference on Big Data, 2017
5. Error Metrics for Learning Reliable Manifolds from Streaming Data. **Suchismit Mahapatra**, Frank Schoeneman, Varun Chandola, Jaroslaw Zola, Nils Napp. Proceedings of SIAM Data Mining Conference, 2017
6. Modeling Graphs Using a Mixture of Kronecker Models. **Suchismit Mahapatra** and Varun Chandola. Proceedings of the 3rd IEEE International Conference on Big Data, 2015.

Seminar/Symposia

2017	S-Isomap++: Multi Manifold Learning from Streaming Data. (IEEE Big Data 2017)	*Boston, NY*
2017	Error Metrics for Learning Reliable Manifolds from Streaming Data. (SIAM SDM 2017)	*Houston, TX*
2016	Error Metrics for Learning Reliable Manifolds from Streaming Data. (UB Computer Science Mixer)	*Buffalo, NY*
2016	Fast Clustering of Flow Cytometry Data via Adaptive Mean Shift. (BD Biosciences)	*San Jose, CA*
2015	Modeling Graphs Using a Mixture of Kronecker Models. (IEEE Big Data 2015)	*Santa Clara, CA*
2012	Entropy-based localization framework for localizing known objects. (NEMS 2012)	*Bedford, MA*

Teaching

- Taught a course on Classification and Decision Trees [Q4 2018, Q2 2019, Q4 2019] while at Criteo Research.
- Taught a course on Generative Models [Q2 2019, Q4 2019] while at Criteo Research.

Additional Coursework/Projects

- Implemented 3PRR Parallel Chain and PRRR Serial Chain Manipulators under Venkat Krovi
- Developed ElGooG – A search engine using ~100000 TREC documents as corpus (won the NTipS 2010 competition)
- Machine Learning course offered by Stanford under Andrew Ng
- Optimization/Mathematics/ML courses offered by Coursera