

Suchismit Mahapatra

RESEARCH SCIENTIST · (MACHINE LEARNING | DEEP LEARNING)

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About Me

I am a Research Scientist with Amobee, applying different Machine/Deep Learning and NLP techniques to solve related problems. I completed my PhD with the [Machine Learning & 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

My research focuses on designing and implementing novel algorithms which enable large-scale learning and includes :

- Machine/Deep Learning
- Natural Language Processing (NLP)
- Deep Graph/Geometric Learning
- Nonlinear/Distributed Optimization

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](#) & [Jaroslav 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 EMNLP 2021 , ACL 2021 and NeurIPS 2021 . | Sunnyvale, CA |
| 2020 | Became a reviewer for ICML 2021 and 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 |

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/FFM) based ML pipeline for usage in production
 - Led efforts to build a FM/FFM based ML pipeline using a novel sparse matrix formulation that can handle high modality features.
- Incorporating user embeddings into existing ML/DL models to improve performance
 - Trained BERT/GAN based generative models to construct user embeddings for usage by our existing models.

Criteo Research

RESEARCH SCIENTIST

Palo Alto R&D Center, CA

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 [Nouredine El Karoui](#))
 - Working towards understanding kernel and manifold specific aspects of theoretical deep learning.
- Resolving the posterior-collapse issue in Seq2Seq learning
 - Developed a quantization based approach towards resolving the posterior-collapse issue. 

The Research Foundation for SUNY

RESEARCH ASSISTANT

Buffalo, NY

January 2018 - May 2018

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

Criteo Research

RESEARCH SCIENTIST INTERN

Palo Alto R&D Center, CA

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

RESEARCH SCIENTIST INTERN

Palo Alto R&D Center, CA

May 2017 - August 2017




- Cross-domain Query-Product (QP) modeling using Adversarial Transfer Learning (worked with [Suju Rajan](#))
 - Developed a robust QP model across retailer domains using Adversarial Transfer Learning. 

The Research Foundation for SUNY

RESEARCH ASSISTANT

Buffalo, NY

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.   

BD Biosciences

MACHINE LEARNING ALGORITHM DESIGN INTERN

San Jose, CA

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

RESEARCH ASSISTANT

Buffalo, NY

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. 
- Volcanic Flow Prediction (worked with [Abani Patra](#) / [Varun Chandola](#) / [Paul Bauman](#))
 - Developed a novel Gaussian Process based model for prediction of volcanic flow using GPUs.

The Research Foundation for SUNY





RESEARCH ASSISTANT

Buffalo, NY


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. Interpretable Graph Similarity Computation via Differentiable Optimal Alignment of Node Embeddings. [Khoa Doan](#), [Saurav Manchanda](#), [Suchismit Mahapatra](#) and [Chandan Reddy](#). (To appear in SIGIR 2021) 
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 (Preprint available in arXiv) 
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 Chan-](#)

dola, 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. 








Additional Certifications/Projects

- NLP certification from [NVIDIA Deep Learning Institute](#) 
- Machine Learning course offered by Stanford under [Andrew Ng](#) 
- Optimization/Mathematics/ML courses offered by Coursera   
- Developed ElGooG – A search engine using ~100000 TREC documents as corpus (won the NTipS 2010 competition) 

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.

Seminar/Symposia

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