

Sanaz Bahargam

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- EXPERTISE** ◇ Natural language processing, Large Language Models, Deep Learning, Machine Learning, Representation Learning, Personalization, Ranking, Generative AI for NLP
- WORK EXPERIENCE**
- ◇ **Amazon Lab126** Sunnyvale, CA
Tech Lead Manager, L6, Applied Scientist (NLP) 2021 - Present
 - Worked as a Tech lead on cross-functional NLP projects to improve Alexa's performance, measure the impact of initiatives on customer satisfaction, and enable new capabilities (e.g. multi-turn conversations, long interactive dialogues and transaction-based dialogues) within Alexa
 - Delivered improvements to a wide range of metrics including accuracy (15% increase), latency (30% decrease), training time (>50% decrease), and user satisfaction metrics
 - Migrated NLU models to generative models, resulting in 15% increase in e2e accuracy and enabled new skills such as food-ordering
 - Worked with a team of engineers, product managers, and leadership to define the long-term team's vision, roadmap and strategy
 - Set the technical & process direction for the team based on business goals and fostered partnership with stakeholders and XFNs
 - Identified potential high-value applications of Large Language Models, Transfer Learning, and Multi-Task Learning and built NLP models to reduce customer friction and reduce time needed to onboard developers
 - Mentored and managed engineers, provided technical guidance, planned career growth and promotions
 - ◇ **Twitter** San Francisco, CA
Machine Learning Engineer, L6, Teach Lead 2017 - 2021
 - Worked as a Tech Lead to improve Search, Trend and Explore (60% increase in Trends' DAU)
 - Developed different ranking loss methods instead of point-wise techniques for Search and Trends result pages, achieved 20% increase in click-through rate and 5% decrease in Tweets' reports
 - Redesigned the Trend service (through many A/B testings) to extend Trends to >60 countries
 - Launched embedding-based models for related searches and Trends recommendation
 - Initiated the representation-learning task force for Search, Trends and Events ranking and recommendation
 - Experimented generative summarization (encoder-decoder model) to summarize Tweets of the same Trend
 - Developed and owned metrics/pipelines to measure Explore and Trends products safety (abuse, spam)
 - Worked with human computation team (designed experiments/guidelines) to evaluate the Trends' safety
 - ◇ **Stevens Institute of Technology** Hoboken, NJ
Researcher and Data Science Instructor May 2016 - Sept. 2016
 - Analysis of User Behavior in Online Forums
 - Studying who is dedicated to his career? A case study of career development in LinkedIn
 - Taught data science course with python including fundamental ML and advanced neural networks
 - ◇ **128 Technology (acquired by Juniper Networks)** Burlington, MA
Data Science Intern May 2015 - Sept. 2015
 - Worked on using machine learning for traffic modeling and traffic congestion avoidance
 - ◇ **Data Mining and Machine Learning Group, Boston University** Boston, MA
Research Assistant 2011 - 2017

Worked on machine learning research projects including: constrained tensor/matrix factorization, combinatorial optimization, constrained clustering problems, neural networks
 - ◇ **Parse CO** Iran
Software Engineer May 2010 - Aug. 2011
Software Engineer Intern June 2009 - Oct. 2009
- SKILLS**
- ◇ Strong knowledge of NLP, DL, ML, Transfer Learning, LLM, Personalization, Recommendation, Ranking
 - ◇ DL Frameworks: PyTorch, Transformer-based models, Hugging Face, PyTorch Lightning, TensorFlow
 - ◇ Programming: Python, Scala, SQL others: GCP, BigQuery, Java, C/C++, Matlab, R

EDUCATION	<ul style="list-style-type: none"> ◇ Boston University Boston, MA <i>Ph.D. in Computer Science</i> <i>2011 - 2017</i> Thesis: <i>Machine Learning Approaches to Educational Applications</i> Selected Course Work: Machine Learning, NLP, Data Mining, Data Science Tools, Statistical Thinking for Data Science, Analysis of Algorithms, Complexity, Randomized Algorithm ◇ Shariaty University Tehran, Iran <i>B.Sc. in Computer Science</i> <i>2006 - 2010</i>
SPEAKING	◇ Deep Learning in Industry - University of Colorado Boulder, 2022
ENGAGEMENTS	<ul style="list-style-type: none"> ◇ Machine Learning for Search and Recommendation - Debug Summit 2021 ◇ Alexa Conversations - NLP Summit 2021 ◇ Machine Learning for Recommendations and Ranking - Saint Louis University, 2021 ◇ Task-based Dialog Systems - Global Artificial Intelligence Conference, 2020 ◇ Trend/Event Detection and Recommendation @Twitter - Lyft meetup 2020
SERVICES	<ul style="list-style-type: none"> ◇ PC member: WIT 2021, NAACL 2019, ICML 2019, TKDE 2018, WiML2017 ◇ External Reviewer: KDD 2019, ICDE 2018, KDD-2017, WWW-2017, WSDM-2017, TKDE 2017, ICDM-2016, CIKM-2016, WWW-2016, INFORMS Journal on Computing (IJOC)-2016 ◇ Girls Who Code, Organizer and Speaker Twitter, 2018, 2019 ◇ Inclusion and Diversity committee member Twitter, 2018-2021 ◇ Organizer for CS Open Houses and Student Ambassador Boston University, 2013-2017
SELECTED PUBLICATIONS	<ul style="list-style-type: none"> ◇ Pre-training Strategies for Enhanced Cross-Domain Generalization in Task-Oriented Dialog Systems. <i>Under submission</i> ◇ S. Bahargam, B. Golshan, T. Lappas, E. Terzi. A team formation algorithm for faultline minimization. <i>Expert Systems w Applications</i> 2019 ◇ S. Bahargam, T. Lappas, E. Terzi. Guided Team-Partitioning Problem: Definition, Complexity & algorithms. <i>EDM</i> 2019. ◇ S. Bahargam, E Papalexakis. Constrained Coupled Matrix-Tensor Factorization and its Application in Pattern and Topic Detection. <i>IEEE/ACM International ASONAM</i> 2018 ◇ S. Bahargam, E Papalexakis. A Constrained Coupled Matrix-Tensor Factorization for Learning Time-evolving and Emerging Topics. <i>arXiv</i> ◇ S. Bahargam, E Papalexakis. Discovering Time-Evolving Topics of Varying Levels of Difficulty via Constrained Coupled Matrix-Tensor Factorization. <i>IC2S2</i> 2018 ◇ S. Bahargam, D. Erdos, A. Bestavros, E. Terzi. Team Formation for Scheduling Educational Material in Massive Online Classes. <i>arXiv</i> ◇ S. Bahargam, T. Lappas. Profiling the Different Types of Data Scientists: Which One is Right for You? <i>Poster in Winter Conference on Business Intelligence</i> 2016 ◇ S. Bahargam, D. Erdos, A. Bestavros, E. Terzi. Personalized Education; Solving a Group Formation and Scheduling Problem for Educational Content. <i>EDM</i> 2015 ◇ R. Skowrya, S. Bahargam, A. Bestavros. Software-Defined IDS for Securing Embedded Mobile Devices. <i>IEEE HPEC</i> 2013 ◇ S. Mirzaei, S. Bahargam, R. Skowrya, A. Kfoury, A. Bestavros. Using Alloy to Formally Model and Reason About an OpenFlow Network Switch. <i>Technical Report</i> 2013 ◇ A. Lapets, R. Skowrya, C. Bassem, S. Bahargam, A. Bestavros, A. Kfoury. Towards Accessible Integrated Formal Reasoning Environments for Protocol Design. <i>Technical Report</i> 2012