MANDANA SAEBI

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PROFESSIONAL SUMMARY

Machine Learning Engineer and Data Scientist with four years of experience in developing novel machine learning models for learning from graph-structured data. Research focuses on Large-scale Graph Analysis, Deep Learning, Reinforcement Learning, Meta-Learning, and Language Modeling.

EDUCATION

University of Notre Dame, Notre Dame, IN *Expected May 2021*
Ph.D. in Computer Science, *Adviser: Prof. Nitesh Chawla* Overall GPA: 3.8

University of Notre Dame, Notre Dame, IN *Sept. 2015 - May. 2016*
M.Sc. in Electrical Engineering, *Adviser: Prof. Peter Bauer* Overall GPA: 3.5

Iran University of Science and Tech, Tehran, Iran *Sept. 2011-2015*
B.Sc. in Electrical Engineering Overall GPA: 3.6

TECHNICAL SKILLS

Technical Skills: Python (Proficient), R, C++, Spark, Pytorch, Tensorflow, SickitLearn Keras, Numpy, SQL, AWS, MATLAB, AMPL, Tableau, ArcGIS, Latex, Microsoft Office Word, Excel, PowerPoint

Certificates: Neural Networks and Deep Learning (Coursera), Sequence Models (Coursera), Building deep learning applications with Keras 2.0 (LinkedIn) , NLP with Python for Machine Learning (LinkedIn), Building Recommendation Systems with Python (LinkedIn), Advanced SQL for data scientists (LinkedIn)

PROFESSIONAL EXPERIENCE

University of Notre Dame Sept 2016 – Present
Graduate Research Assistant

- Developed a deep reinforcement learning method for explainable heterogeneous relational reasoning in knowledge graphs.
- Designed a meta learning method for few-shot knowledge graph completion (accepted in EMNLP 2020).
- Improved the prediction of chemical reaction performance by 5% using a deep learning approach by integrating domain expert knowledge and complex molecular graph interactions via LSTMs and graph neural networks.
- Developed a higher-order network embedding method resulting in significant improvement (up to 71.5%) on classification, clustering, and link prediction accuracy over several machine learning algorithms.
- Achieved significant improvement (up to 52.4%) on the task of anomaly detection on synthetic and real-world taxi traffic data by developing a scalable algorithm for detecting anomalies in the large sequential data.
- Designed a logistic regression scheme for finding reliable information in the noisy Twitter data with significant improvement in precision and recall (Course project).
- Improved the memory utilization of Amazon EC2 servers by 21%(while reducing the annual costs by 51%) by designing a minimum-cost flow model framework for infrastructure cost optimization of cloud-hosted services.

Apple June 2020 - September 2020
Machine Learning Research Intern *Cupertino, CA*

- Developed a discriminative knowledge graph driven language model for improving automatic speech recognition performance on long-tailed entities using a consistent, scalable, and adaptable approach.

Tala May 2019 - August 2019
Data Science Intern *Santa Monica, CA*

- Implemented a deep learning framework for unsupervised domain adaptation resulting in boosting the target domain predictions with no labeled data up to 5.7%; The model transfers knowledge from a country with rich financial labeled data to another country with no labeled data.

AWARDS & TALKS

- Winner of the ACM Student Research Competition at The Grace Hopper Celebration 2020
- Awarded full Grace Hopper Scholarship 2019 from AnitaB.org (Sponsored by Boeing)
- Invited talk at KDD 2019 Workshop in Anomaly Detection in Finance, Anchorage, USA
  Title: Higher-Order Networks for Anomaly Detection
- Awarded full travel grant to attend 2020 CRA Grad Cohort for Women.

SELECTED PUBLICATIONS

1. Mandana Saebi, Steven Kreig, Chuxu Zhang, Meng Jiang, Nitesh Chawla "*Heterogeneous Relational Reasoning in Knowledge Graphs with Reinforcement Learning*, (Under review in TKDD)
2. Chuxu Zhang, Lu Yu, Mandana Saebi, Meng Jiang, Nitesh Chawla, "*Few-Shot Multi-Hop Relation Reasoning over Knowledge Bases*, In Proceedings of the 2020 Conference on Empirical Methods in Natural Language Processing: Findings (pp. 580-585).
3. Mandana Saebi, Giovanni Ciampaglia, Nitesh V. Chawla, David M. Lodge, "*HONEM: Learning Embedding for Higher Order Networks*", Big Data 8, no. 4 (2020): 255-269.
4. Mandana Saebi, Jian Xu, Salvatore R. Curasi, Erin K. Grey, Nitesh V. Chawla, David M. Lodge. *"Network Analysis of Ship-borne Species Introduction and Dispersal in the Arctic"*, Sci Rep 10, 19558 (2020).
5. Mandana Saebi, Jian Xu, Bruno Ribeiro, Lance M. Kaplan, Nitesh V. Chawla, *"Efficient Modeling of Higher-Order Dependencies in Networks: From Algorithm to Application for Anomaly Detection"*, EPJ Data Science 9 (2020): 1-22.
6. Chuxu Zhang, Lu Yu, Mandana Saebi, Zhichun Guo, Meng Jiang, Nitesh Chawla, *"Multi-Hop Meta Relation Learning for Knowledge Bases"*, (Under review in TKDE)
7. Mandana Saebi, Erin K. Grey, Jian Xu, Nitesh V. Chawla, David M. Lodge,"*Higher-Order Patterns of Aquatic Species Spread through the Global Shipping Network*" , PLoS one, 15(7), e0220353.
8. Frederick Nwanganga, Mandana Saebi, Gregory R. Madey, Nitesh V. Chawla *"A Minimum-Cost Flow Model for Workload Optimization on Cloud Infrastructure"*, IEEE CLOUD 2017: 480-487

LEADERSHIP AND SERVICE

- Served as the Research Track program committee member for ECML PKDD 2020.
- Served as the Data Science Committee Member for GHC 2019.
- **University of Notre Dame**; Social chair of Notre Dame Grad SWE board 2018-2019
- **University of Notre Dame**; Graduate CSE Engineering mentor 2017-2020
- **University of Notre Dame**; Graduate student board representative 2018-2020
- **Iran University of Science and Tech**; Vice president of the Student Scientific Association 2014-2015
- **Iran University of Science and Tech**; Leader of The Official Robotic Laboratory 2013-2014

SELECTED COURSES

Data Science	Natural Language processing
Advanced Machine Learning	Optimization for Big Data Application
Complexity & Algorithms	Network Science
C++ Programming	Detection and Estimation
Probability & Random Processes	Topics in Statistics