

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	<i>Expected May 2021</i>
Ph.D. in Computer Science, <i>Adviser: Prof. Nitesh Chawla</i>	Overall GPA: 3.8
University of Notre Dame, Notre Dame, IN	<i>Sept. 2015 - May. 2016</i>
M.Sc. in Electrical Engineering, <i>Adviser: Prof. Peter Bauer</i>	Overall GPA: 3.5
Iran University of Science and Tech, Tehran, Iran	<i>Sept. 2011-2015</i>
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
<i>Graduate Research Assistant</i>	

- 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
<i>Machine Learning Intern</i>	<i>Cupertino, CA</i>

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

Tala (FinTech)	May 2019 - August 2019
<i>Data Science Intern</i>	<i>Santa Monica, CA</i>

- 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*”, (Accepted in EMNLP 2020)
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, 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.
5. Chuxu Zhang, Lu Yu, Mandana Saebi, Zhichun Guo, Meng Jiang, Nitesh Chawla, “*Multi-Hop Meta Relation Learning for Knowledge Bases*”, (Under review in AAAI)
6. 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.
7. 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
8. 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*”, (Accepted in Nature’s Scientific Reports)

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