

# Zohair Shafi

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## Education

### Northeastern University

PhD in Computer Sciences (Specializing in Machine Learning and Network Science)

Boston, MA, U.S.

Sep. 2021 - Present

### Visvesvaraya Technological University

Bachelor of Engineering in Computer Sciences

Bangalore, Karnataka, India

Aug. 2015 - Jun. 2019

## Publications

- [1] Shafi, Z., Miller, B.A., Chatterjee, A., Eliassi-Rad, T. and Caceres, R. S., 2023. **GRASP: Accelerating Shortest Path Attacks via Graph Attention**. In Deep Learning on Graphs Workshop, Knowledge Discovery and Data Mining 2023. [\[Link\]](#)
- [2] Miller, B.A., Shafi, Z., Ruml, W., Vorobeychik, Y., Eliassi-Rad, T. and Alfeld, S., 2023. **Defense Against Shortest Path Attacks**. arXiv preprint arXiv:2305.19083. [\[Link\]](#)
- [3] Chatterjee, A., Walters, R., Shafi, Z., Ahmed, O.S., Sebek, M., Gysi, D., Yu, R., Eliassi-Rad, T., Barabási, A.L. and Menichetti, G., 2023. **Improving the generalizability of protein-ligand binding predictions with AI-Bind**. Nature Communications, 14(1), p.1989. [\[Link\]](#)
- [4] Miller, B.A., Shafi, Z., Ruml, W., Vorobeychik, Y., Eliassi-Rad, T. and Alfeld, S., 2021. **Optimal Edge Weight Perturbations to Attack Shortest Paths**. arXiv preprint arXiv:2107.03347. [\[Link\]](#)
- [5] Miller, B.A., Shafi, Z., Ruml, W., Vorobeychik, Y., Eliassi-Rad, T. and Alfeld, S., 2021, September. **PATHATTACK: Attacking Shortest Paths in Complex Networks**. In Joint European Conference on Machine Learning and Knowledge Discovery in Databases (pp. 532-547). Springer, Cham.[\[Link\]](#)
- [6] Liu, D.\*, Shafi, Z.\*, Fleisher, W., Eliassi-Rad, T. and Alfeld, S., 2021, July. **RAWLSNET: Altering Bayesian Networks to Encode Rawlsian Fair Equality of Opportunity**. In Proceedings of the 2021 AAAI/ACM Conference on AI, Ethics, and Society (pp. 745-755). [\[Link\]](#)

## Ongoing Projects

### GRASP: Graph Attention based Shortest Path attack

Zohair Shafi, Benjamin A. Miller, Ayan Chatterjee, Tina Eliassi-Rad, Rajmonda S. Caceres

August 2023

- Developed a system to speed up an APX Hard problem of attacking shortest paths using Graph Attention. Accepted at **DLG-KKD Aug '23**

### Explaining Node Embeddings

Zohair Shafi, Ayan Chatterjee, Tina Eliassi-Rad

November 2021 - Present

- Develop an approach to explain each dimension in a low dimensional latent space representation of a network.
- Invited to present at **Graph Exploitation Symposium, May 2022**. Accepted and presented at **NetSci, July 2022**

## Work Experience

### Akamai Technologies

Performance Engineer - Global Performance And Operations

Bangalore, India

Jul. 2019 - Jul. 2021

- Developed solutions to optimize performance metrics like throughput, content offload and latency across the platform
- Developed systems for efficient data mining and visualizations from raw log data
- Helped scale and prepare the Akamai platform and run final checks for company critical events such as the IPL cricket league and the Apple WWDC keynote driving up to 10 Tbps of traffic in a single country.
- Mentored 2 interns during the development of their respective projects and presentations

### Akamai Technologies

Intern - Platform & Delivery

Bangalore, India

Jan. 2019 - May 2019

- Built a system to help root cause analysis by performing correlation across time series data
- Created tools to help visualize network traffic demand across countries for a set of servers

## Certifications

### Reinforcement Learning Specialization

University of Alberta AMII

Coursera

Apr. 2020

- Courses - Fundamentals of Reinforcement Learning | Sample based Learning Methods | Prediction and Control with Function | A Complete Reinforcement Learning System (Capstone)

### Deep Learning Specialization

deeplearning.ai

Coursera

Apr. 2018

- Courses - Neural Networks And Deep Learning | Improving Deep Neural Networks : Hyper-parameter Tuning, Regularization and Optimization | Structuring Machine Learning | Convolutional Neural Networks | Sequence Models