# Zohair Shafi

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## Education

**Northeastern University** — *Boston, MA, U.S.*
PhD in Computer Sciences (Specializing in Machine Learning and Network Science) - CGPA 3.98/4 — Sep. 2021 - Present

**Visvesvaraya Technological University** — *Bangalore, Karnataka, India*
Bachelor of Engineering in Computer Sciences - CGPA 8.16/10 — Aug. 2015 - Jun. 2019

## Publications

[1] **Shafi, Z.**, Kadioglu, S., 2025. **FORGE: Foundational Optimization Representations from Graph Embeddings**. arXiv preprint arXiv:2508.20330. [Link]

[2] **Shafi, Z.**, Savcisens, G., and Eliassi-Rad, T., 2025. **REGE: A Method for Incorporating Uncertainty in Graph Embeddings**. In Proceedings of the 2025 SIAM International Conference on Data Mining (SDM). [Link]

[3] **Shafi, Z.**, Miller, B.A., Eliassi-Rad, T. and Caceres, R. S., 2025. **Accelerated Discovery of Set Cover Solutions via Graph Neural Networks**. In International Conference on the Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR). [Link]

[4] **Shafi, Z.**, Chatterjee, A., and Eliassi-Rad, T., 2025. **Explaining Node Embeddings**. In Transactions on Machine Learning Research (TMLR). [Link]

[5] Miller, B.A., **Shafi, Z.**, Ruml, W., Vorobeychik, Y., Eliassi-Rad, T. and Alfeld, S., 2025. **Defense Against Shortest Path Attacks**. In Proceedings of the 2025 SIAM International Conference on Data Mining (SDM). [Link]

[6] Miller, B.A., **Shafi, Z.**, Ruml, W., Vorobeychik, Y., Eliassi-Rad, T. and Alfeld, S., 2023. **Attacking Shortest Paths by Cutting Edges**. ACM Trans. Knowl. Discov. Data (TKDD) 18, 2, Article 35 (February 2024), 42 pages. [Link]

[7] **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 (KDD) [Link]

[8] 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]

[9] 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 (ECML-PKDD) (pp. 532-547). Springer. [Link]

[10] 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 (AIES) (pp. 745-755). [Link]

## Work Experience

**Fidelity Investments** — *Boston, MA, U.S.*
Co-op - Data Scientist - AI Center of Excellence — Jan. 2025 - Jul. 2025

- Developed a foundational graph neural network-based architecture to represent general mixed integer programs (MIPs) to enhance the efficiency of heuristic solution methods [1].
- Developed a foundational architecture for customer representation for use across various business units.

**Akamai Technologies** — *Bangalore, Karnataka, India*
Performance Engineer II - Global Performance And Operations — Jul. 2019 - Jul. 2021

- Optimized platform performance metrics, including throughput, content offload, and latency, leading to enhanced overall system efficiency.
- Designed and implemented systems for efficient data mining and visualization from raw log data, providing actionable insights and improved decision-making.
- Scaled and prepared the Akamai platform for critical events, such as the IPL cricket league and Apple WWDC keynote, successfully handling up to 10 Tbps of traffic in a single country.
- Mentored and guided two interns through the development of their projects and presentations, ensuring successful completion.

**Akamai Technologies** — *Bangalore, Karnataka, India*
Intern - Platform & Delivery — Jan. 2019 - May 2019

- Developed an efficient system for root cause analysis by performing correlation across multiple streams of time series data, improving the accuracy and speed of issue identification.
- Developed tools to visualize network traffic demand across the Akamai network at various levels of granularity, including by country or specific server sets, improving capacity planning and resource allocation.

## Academic Services

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| Reviewer | KDD '24, ECAI '25, NeurIPS '25, AI Magazine '25 |
| Program Comittee | IAAI '26 |