Anwar Said

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About

My research belongs to the area of graph machine learning (GML), which is an emerging field of research with extensive applications in various domains. In particular, I work on the algorithmic aspect of GML approaches to enhance their performance in terms of memory, computational complexity and accuracy using constructs from graph theory. I also work in network science and graph theory to design solutions for different real-world problems in different domains. More recently, I have expanded my research to the GML applications in electronic design automation and graph transformers.

Education

Postdoctoral Research Scholar

- Institute for Software and Integrated Systems,
  Department of Computer Science, Vanderbilt University, TN March 2021-present
- Advisor: Prof. Xenofon Koutsoukos
- Area: Graph Machine Learning and its applications

Ph.D. Computer Science

- Information Technology University, Lahore, Pakistan Nov. 2021
- Advisors: Dr.Saeed-Ul Hassan, Dr.Mudassir Shabbir
- *Dissertation:* Novel Graph Representations for Machine Learning Applications

M.Phil. Computer Science

- Quaid-i-Azam University, Islamabad, Pakistan Aug. 2016
- *Dissertation:* Discovering Community Structure of Complex Networks
- Major Area of Study: Social Network Analysis, Graph Theory
- Minor Area of Study: Artificial Intelligence

M.Sc. Computer Science

- University of Swat Dec. 2013

B.ED. Bachelor of education

- Allama Iqbal Open University Dec. 2013

Positions

- **Graph ML Scientist**
  BUILD & CODE Germany Oct. 2021 - Mar. 2022
  Build & Code is a new startup aiming toward the design of automated systems with the latest AI technology to process large documents, improve matching & search, and recommendation. Having a knowledge graph of over 10 billion data points, my role at Build & Code was to develop Machine Learning Models for the knowledge graph completion task. In a time span of less than a year, I built robust ML frameworks that were able to perform the desired tasks with superb performance.

Research Experience

Institute for Software and Integrated Systems, Vanderbilt University
Postdoctrol Research Scholar Mach 2023-present
Research Interests: Graph Machine Learning, Graph Descriptors, Circuit Design Completion, Graph Theory

PhD Student at Information Technology University, Lahore (Sep 2017-Oct 2022)
Projects: Graph Machine Learning, Social Network Analysis, Altmetrics, Ethereum Network Analysis, Federated Learning

Research Associate: Quaid-i-Azam University, Islamabad Aug 2016 - Sep 2017
Research areas: Community detection in social networks, Genetic Algorithms,

Master Student: Quaid-i-Azam University, Islamabad Sep 2014 - Sep 2016
Research areas: Social network analysis, Graph theory, Machine Learning

Awards and Honors

- Recipient of the Vanderbilt University, *Postdoctoral research scholar fellowship*
- Recipient of the *travel grant* for attending the "Youth in High-dimensions: Machine Learning, High-dimensional Statistics and Inference for the New Generation" Conference, 2020, ICTP, Trieste, Italy.
- Recipient of the Information Technology University, *Ph.D. Fellowship* 2017-2021
- Recipient of the *Gold Medal* from University of Swat for achieving highest academic ranking

Programming Experience

- **Industry:** Shaheen Foundation, Islamabad July 2016 - Sep. 2017
- **Freelancing:** Worked on numerous development and R&D projects with national and international clients

Programming Tools

- Python, Networkx, Tensorflow, Scikit-learn, Pytorch-Geometric, Pytorch, Deep Graph Library, Multiprocessing, SQL, Neo4J
- C++, QT, OpenGL, iGraph, Message Passing Interface (MPI), Socket Programming

Research Impact

Number of citations: 212
Impact factor: 43

Publications

1. Said, A., Shabbir, M., Broll, B, Volgyesi, P, Abbas, W, & Koutsoukos, X., "Circuit Design Completion Using Graph Neural Networks", under review- journal of Neural Computing and its applications
2. **Said, A.**, Ahmad, U, Abbas, W., Shabbir, M., & Koutsoukos, X. Network Controllability Perspectives on Graph Representation, to be submitted to ICLR2023.
3. Ahmed A., **Said, A.**, Shabbir, M., & Koutsoukos, X. Identifying Source Code Vulnerability using Graph Neural Networks, under review in HotSoS2022 Symposium.
4. **Said, A.**, Shabbir, M., Hassan, S. U., Hassan, Z. R. & Ahmed, A. On Augmenting Topological Graph Representations for Attributed Graphs. under review in Applied Soft Computing journal, Elsevier.
5. Athar, A, Abbasi, R. A., Saeed Z., **Said A.**, ASBiNE: Dynamic Bipartite Network Embedding for Incorporating Structural and Attribute Information, under review in expert system with application journal

6. Mian, A., Shah, S, Ullah, S., **Said, A.**, Heimerl, K., & Crowcroft, J. A Value-Added IoT Service For Cellular Networks using Federated Learning, computer networks (2022).
7. **Said, A.**, Janjua, M. U., Hassan, S. U., Muzammal, Z., Saleem, T., Thaipisutikul, T., ... & Nawaz, R. (2021). Detailed analysis of Ethereum network on transaction behavior, community structure and link prediction. PeerJ Computer Science, 7, e815.
8. **Said, A**., Hassan, S. U., Tuarob, S., Nawaz, R., & Shabbir, M. (2021). DGSD: Distributed graph representation via graph statistical properties. Future Generation Computer Systems, 119, 166-175.
9. **Said, A.**, Hassan, S. U., Abbas, W., & Shabbir, M. (2021). NetKI: A kirchhoff index based statistical graph embedding in nearly linear time. Neurocomputing, 433, 108-118.
10. Hassan, S. U., Shabbir, M., Iqbal, S., **Said, A.**, Kamiran, F., Nawaz, R., & Saif, U. (2019). Leveraging Deep Learning and SNA approaches for Smart City Policing in the Developing World. International Journal of Information Management, 102045.
11. **Said, A.**, Bowman, T. D., Abbasi, R. A., Aljohani, N. R., Hassan, S. U., & Nawaz, R. (2019). Mining network-level properties of Twitter altmetrics data. Scientometrics, 120(1), 217-235.
12. **Said, A.**, Shah, S., Farooq, H., Mian, A., Imran, A., & Crowcroft, J. (2018). Proactive Caching at the Edge Leveraging Influential User Detection in Cellular D2D Networks. Future Internet, 10(10), 93.
13. Imran, M., Akhtar, A., **Said, A.**, Safder, I., Hassan, S. U., & Aljohani, N. R. (2018, September). Exploiting Social Networks of Twitter in Altmetrics Big Data. In 23rd STI 2018 conference, September 12-14, 2018, Leiden, The Netherlands. Centre for Science and Technology Studies (CWTS).
14. **Said, A.**, Abbasi, R. A., Maqbool, O., Daud, A., & Aljohani, N. R. (2018). CC-GA: A clustering coefficient based genetic algorithm for detecting communities in social networks. Applied Soft Computing, 63, 59-70.

Referee Services Conferences

- International Conference on Machine Learning (ICML)
- Neural Information Processing Systems (NeurIPS)

Referee Services Journals

- Swarm and Evolutionary Computation (Elsevier)
- IEEE Access
- IEEE Transactions on Computational Social Systems
- ACM Transaction on Social Computing
- Journal of Ambient Intelligence and Humanized Computing