



# Saad Shafiq

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## EDUCATION

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**Johannes Kepler University**, Linz, Austria

*Doctor of Philosophy in Computer Science*

Aug 2019 – Dec 2022

**NUCES**, Islamabad, Pakistan

*Master of Science in Software Engineering*

Aug 2015 – Aug 2017

## SERVICES

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- Program Committee Member: Research track EASE 2025, AAAI 2026, EASE 2026, ICSME 2026
- Program Committee Member: Short paper track EASE 2025, EASE 2026
- Program Committee Member: Industry track CAIN 2025
- External Reviewer: ICSE '24, CAIN '24, SANER '24, ASE '24, ICSE '23

## TALKS

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- NLP4IP: Natural Language Processing-based Recommendation Approach for Issues Prioritization, Palermo, Italy – Sep 2021
- TaskAllocator: A Recommendation Approach for Role-based Tasks Allocation in Agile Software Development, Madrid, Spain – June 2021
- Towards Optimal Assembly Line Order Sequencing with Reinforcement Learning: A Case Study, Vienna, Austria – Sep 2020

## EXPERIENCE

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**USC**, Post-doc Researcher, Los Angeles, CA, USA

Jan 2024 – Current

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**JKU**, Post-doc Researcher, Linz, Austria

June 2023 – Jan 2024

- Tech. stack: Python, R, SQL, Git, Pandas, Numpy, Scikit, Keras, Tensorflow, Pytorch, Javascript, Vuejs
- Multivariate analysis, anomaly detection, LLMs

**JKU**, Researcher, Linz, Austria

June 2019 – March 2023

- Tech. stack: Python, R, SQL, Git, Pandas, Numpy, Scikit, Keras, Tensorflow, Pytorch, Neo4j
- Worked on problems including classification, clustering, regression, and optimization
- Implemented prototypes and POCs to improve software engineering life cycle using contemporary machine learning algorithms
- Worked with NLP techniques including topic extraction, LDA, and sentiment analysis

- Responsible for analyzing complex and large scale structured/unstructured datasets and converting into actionable insights
- Experienced in statistical analysis, applied machine learning, and making technicalities graspable for the stakeholders

**MTBC, Blockchain Developer**

February 2019 – May 2019

- Responsible for setting up a highly resilient and sustainable blockchain network architecture
- Ensured stable and robust distributed environment using Kubernetes
- Implemented Hyperledger fabric framework and worked on script automation
- Proficient in Hyperledger tools such as Hyperledger Composer and Hyperledger Explorer
- Written business logic chaincodes in golang and node.js
- Hands on experience with writing smart contracts in solidity (Ethereum)
- Created DApps (Distributed applications) with exposed REST APIs'

**MTBC, Software Engineer**

January 2018 – February 2019

- Tech. stack: C#, .NET framework, SQL, razor pages, ASP.NET
- Responsible for deployments to QA, Staging and Production environment as being the release owner in the team working on EHR-related systems
- Responsible for reviewing and merging the code of entire team on TFS
- Developed and deployed services on Azure to analyze healthcare data, ensuring compliance with FHIR, HL7, ICD, and HIPAA standards
- Rigorously followed agile methodologies (SCRUM, Kanban) in the development process using JIRA
- Implemented the latest hashing algorithm in the system
- Created stored procedures for reporting and analytics
- Performed JSON manipulation and Schema validation
- Enhanced product's performance by implementing bulk insertions to database and enabling multi-threading
- Acted as a liaison between Product Owners and the team to ensure development and operations are moving in the right direction
- Designed the architecture of new modules of the system
- Developed Web APIs for new modules in the system
- Managed support and helpdesk team to always cater to client needs
- Analyzed and evaluated client requests in order to develop new functionality

**NUCES, Research Assistant**

August 2016 – October 2017

- Conducted research to identify major research gaps in the area of Requirements Engineering, Machine Learning, and Agile Software Development Processes
- Performed Social Network Analysis on large datasets using UCINet and Gephi
- Published research articles in Tier-1 and high impact journals and conferences
- Collaborated with the active researchers in the domain of Requirements Engineering, Data Science, Machine Learning, and Software Testing
- Analyzed large datasets and produced meaningful insights using contemporary machine learning algorithms

**Fiverr/Local, Freelancer**

2015 – 2017

- Full-Stack Asp.net Development
- Implemented Zendesk, Freshdesk for support operations
- Created infographic, company's business projection-oriented videos

**Target Systems, Intern**

January 2015 – February 2015

- Performed WorkFlow Management
- Worked on different modules of company's CRM product

**Fauji Fertilizers Bin Qasim Limited (FFBL), Intern**

June 2014 – July 2014

- Assisted in support operations
- Created purchase orders using SAP Business Objects
- Used Lotus mail to interact with company's employees

**Pakistan Telecom Company Limited (PTCL), Intern**

June 2013 – August 2013

- Used Oracle Siebel (CRM) to provide customer support
- Explored SAP Enterprise Resource Planning

**PUBLICATIONS**

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- Ngo, Tuan, Abid Hassan, **Saad Shafiq**, and Nenad Medvidovic. "Improving DNN Modularization via Activation-Driven Training." In 2026 IEEE/ACM 48th International Conference on Software Engineering (ICSE).
- Das, Satyaki, Syeda Tasnim Fabiha, **Saad Shafiq**, and Nenad Medvidovic. "Are We Learning the Right Features? A Framework for Evaluating DL-Based Software Vulnerability Detection Solutions." In 2025 IEEE/ACM 47th International Conference on Software Engineering (ICSE).
- Marchezan, Luciano, Wesley KG Assunção, Edvin Herac, **Saad Shafiq**, and Alexander Egyed. "Exploring Dependencies Among Inconsistencies to Enhance the Consistency Maintenance of Models." In 2024 IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER), pp. 147-158. IEEE, 2024. **[Distinguished Paper Award]**
- **Saad Shafiq**, Christoph Mayr-Dorn, Atif Mashkoor, and Alexander Egyed. "Balanced knowledge distribution among software development teams—Observations from open-and closed-source software development." Journal of Software: Evolution and Process (2024): e2655.
- Sejfia, Adriana, Satyaki Das, **Saad Shafiq**, and Nenad Medvidović. "Toward Improved Deep Learning-based Vulnerability Detection." In 2024 IEEE/ACM 46th International Conference on Software Engineering (ICSE), pp. 730-741. IEEE Computer Society, 2023.
- Azeem, Muhammad Ilyas, **Saad Shafiq**, Atif Mashkoor, and Alexander Egyed. "Code smells in pull requests: An exploratory study." Software: Practice and Experience (2023).
- **Shafiq, Saad**, Wesley KG Assunção, Atif Mashkoor, Christoph Mayr-Dorn, and Alexander Egyed. "Towards Recommending Refactoring Operations Based on Bugs." Available at SSRN 4397230.
- **Saad Shafiq**, Atif Mashkoor, Christoph Mayr-Dorn, Alexander Egyed, "A Literature Review of Using Machine Learning in Software Development Life Cycle Stages." IEEE Access, 2021.
- **Saad Shafiq**, Atif Mashkoor, Christoph Mayr-Dorn, Alexander Egyed, "NLP4IP: Natural Language Processing-based Recommendation Approach for Issues Prioritization." In the proceedings of 2021 47th Euromicro Conference on Software Engineering and Advanced Applications (SEAA), 2021.
- **Saad Shafiq**, Atif Mashkoor, Christoph Mayr-Dorn, Alexander Egyed, "TaskAllocator: A Recommendation Approach for Role-based Tasks Allocation in Agile Software Development." In the proceedings of 2021 IEEE/ACM Joint 15th International Conference on Software and System Processes (ICSSP) and 16th ACM/IEEE International Conference on Global Software Engineering (ICGSE), 2021. **[Distinguished Paper Award Nominee]**
- **Saad Shafiq**, Christoph Mayr-Dorn, Atif Mashkoor, Alexander Egyed, "Towards Optimal Assembly Line Order Sequencing with Reinforcement Learning: A Case Study." In the proceedings of 2020 25th IEEE International Conference on Emerging Technologies and Factory Automation (ETFA), 2020.

- **Saad Shafiq**, Atif Mashkoor, Christoph Mayr-Dorn, Alexander Egyed, "Machine Learning for Software Engineering: A Systematic Mapping." arXiv preprint arXiv:2005.13299, 2020.
- **Saad Shafiq**, Irum Inayat, Muhammad Abbas, "Communication Patterns of Kanban Teams and their Impact on Iteration Performance and Quality." In the proceedings of 2019 45th Euromicro Conference on Software Engineering and Advanced Applications (SEAA), 2019.
- Shafiq Rehman, Volker Gruhn, **Saad Shafiq**, Irum Inayat, "A systematic mapping study on security requirements engineering frameworks for cyber-physical systems." In the proceedings of International Conference on Security, Privacy and Anonymity in Computation, Communication and Storage, 2018.
- **Saad Shafiq**, Irum Inayat, "Towards Studying the Communication Patterns of Kanban Teams: A Research Design." In the proceedings of 2017 IEEE 25th International Requirements Engineering Conference Workshops (REW), 2017.
- **Saad Shafiq**, Irum Inayat, "Model-driven Development based Cross Platform Application Development: A Systematic Mapping Study." Journal of Information Science and Engineering, 2017.