

University Academic Curriculum Vitae

Usman Rafiq, PhD

Education since Leaving School

- 2011, BS in Software Engineering, IIU (Pakistan)
- 2016, Master's in Computer Science, (European Masters), Free University of Bozen-Bolzano (Italy)
 - Thesis title: Understanding the Requirements Elicitation in Software Startups: An Empirical Study
 - Supervisors: Prof. Xiaofeng Wang, Prof. Samuel A. Fricker
- 2016, Master's in Software Engineering (European Masters), Blekinge Institute of Technology (Sweden)
- 2024, Ph.D. in Computer Science, Free University of Bozen-Bolzano (Italy)
 - Title: Understanding Analytics in Software Startups
 - Supervisor: Prof. Xiaofeng Wang

Present Appointment

- Research Assistant
- Level of appointment: Postdoctoral Research Fellow and Research Lead
- Free University of Bozen-Bolzano (Italy)
- Leading research activities focused on Generative AI for early-stage startups, supporting Principal and Co-Investigators, and contributing to the development of a practical handbook and tool suite for startups, including coordination with external companies and teams, supervising and mentoring team members in day-to-day research and development activities; co-supervising undergraduate and graduate theses related to project work; and teaching graduate course in Software Engineering.

Professional Experience

From / to	Job title	Name of Institution/Company	Responsibilities
Feb 2011 – Jul 2011	Teaching Assistant	IIU, Islamabad (Pakistan)	Assisted the course instructor in preparing and delivering the Software Requirements Engineering course (Spring 2011), facilitated weekly tutorials, supervised laboratory sessions using IBM Rational RequisitePro, graded modeling assignments and practice projects, and provided academic support to students. Supervisor: Prof. Dr. Naveed Ikram, RIU, Islamabad (Current).
Jan 2012 – Jan 2013	Lab Instructor	FAST-National University of Computer and Emerging Sciences, Islamabad (Pakistan)	Prepared undergraduate students with hands-on experience in course concepts, including Object-Oriented Analysis and Design, Introduction to Java, and Operating Systems Programming using C/C++.
Jan 2012 – Jan	Visiting Lecturer	IIU, Islamabad (Pakistan)	Taught undergraduate courses focusing on Programming Fundamentals, Software

2013			Engineering Economics, and Professional Practices. Conducted training sessions and seminars for final-year software engineering students in collaboration with software companies.
Sep 2011 - July 2013	System Analyst	Easelomist Inc. (Pakistan)	Prepared project proposals and collaborated with project management, development, and quality assurance teams. Developed and implemented business processes and models, and prepared presentations for end-users and stakeholders. Elicited customer-specific requirements using multiple techniques, analyzed requirements, resolved conflicts between stakeholder needs, and specified product and project features. Designed use cases and user stories, and managed requirements using IBM Rational RequisitePro.
Oct 2015 – Dec 2015	Software Developer	Free University of Bozen-Bolzano (Italy)	Participated in the development of a software project titled "Information Radiators for Distributed Software Development" using PHP.
Feb 2017– Jan 2018	Lecturer (Software Engineering)	Capital University of Science and Technology (Pakistan)	Taught undergraduate courses in Software Engineering, focusing on Object-Oriented Analysis and Design, Object-Oriented Programming, Introduction to Programming, and general Software Engineering. Served as a member of the departmental Quality Enhancement Cell, acted as secretary of the curriculum review committee for the Bachelor's in Software Engineering, and supervised student projects.
Feb 2018 – Nov 2019	Lecturer (Software Engineering)	IIU, Islamabad (Pakistan)	Taught advanced undergraduate courses including Software Engineering, Object-Oriented Analysis and Design (with UML), Software Construction, Information Systems Audit, and introductory programming courses such as Object-Oriented Programming and Introduction to Programming. Provided academic advising, student support, and counseling. Supervised various undergraduate computer science projects. Served as moderator of the Board of Studies for graduate programs, and as a member of the admission test committee and the undergraduate final-year project evaluation committee.
Dec 2021 – Feb 2022	Academic Tutor-Digital Didactics	Free University of Bozen-Bolzano (Italy)	Developed and implemented an in-house "Train-the-Trainer" program for professors to effectively utilize technology and tools in teaching and student evaluation. Participated to institutionalize modern pedagogical technologies supporting faculty members. Developed and provided ongoing support for the university's Online Learning Management System, and conducted training sessions.
Sep 2022 – Jul 2024	Graduate Teaching Assistant	Free University of Bozen-Bolzano (Italy)	Assisted the course instructor and conducted programming laboratories for undergraduate students in Electronics and

			Cyber-Physical Systems. Led activities related to assessment creation, lab sessions, project supervision, and lab content design. Courses taught included Fundamentals of Programming I and II, covering C, C++, Python, Git version control systems, and programming on Raspberry Pi Pico W using C and Python. Supervisor: Prof. Dr. Sergio Tessaris.
Feb 2024-present	Research Assistant	Free University of Bozen-Bolzano (Italy)	Supported all work packages to ensure continuous progress, including research on need analysis of all-remote startups and participation of prototype development. Actively participated in evaluating the developed software solution, assisted in recruiting users for evaluation. Also, engaged in additional related research activities, such as, reporting on these activities. Supervisor: Prof. Xiaofeng Wang

Other Academic Responsibilities

Internal appointments to faculty and university boards

- Secretary, Board of Studies for Graduate Studies, 2018-2019, IIU (Pakistan)
- Committee Member, Departmental Quality Enhancement Cell, 2017-2018, CUST (Pakistan)
- Secretary, Curriculum Review Committee for Bachelor's in Software Engineering, 2017-2018, CUST (Pakistan)
- Member of Admission Test Committee and Undergraduate Final Year Project Evaluation Committee, 2018-2019, IIU (Pakistan)

Responsibilities for organizing conferences

- Co-Chair, ICSE Workshop: 9th International Workshop on Software-intensive Business (IWSiB 2026)
- Poster Track Chair, International Conference on Software Business (ICSOB) 2025
- Student Volunteer Chair, International Conference on Software Business (ICSOB) 2022
- Student Volunteer, ICSE 2022 & International Conference on Agile Software Development (XP) 2021

Memberships

Membership of Academic or Professional Bodies / Editorial Work / Scientific Committees

- Member of Software Startups Global Research Network since 2019
- Program Committee Member, Edited Book: Advances in Software Startups: Generative AI, Product Engineering and Business Development, 2025
- Program Committee Member, International Conference on Software Business (ICSOB), 2025
- Sub-reviewer, Euromicro Conference on Software Engineering and Advanced Applications (SEAA) 2025
- Reviewer, journal PeerJ 2025
- Reviewer, ChinaSoft 2025
- Reviewer, Information and Software Technology (IST) 2024–2025
- Reviewer, CHASE 2024
- Program Committee Member, ICSOB 2024, 2023, 2022, 2021
- Program Committee Member, SOICT 2025, 2023
- Reviewer, European Conference on Information Systems (ECIS) 2023

- Program Committee Member, edited book on Effective Software Development with Generative Artificial Intelligence, GenAI4SE, 2023
- Sub-reviewer, FSE 2025
- Reviewer, International Conference on Agile Software Development (XP 2021)
- Reviewer, International Conference on Software Engineering (ICSE 2020)
- Reviewer, International Conference on Product-Focused Software Process Improvement (PROFES) 2019
- Reviewer, Foundations of Computing and Decision Sciences (FCDS) 2021

Research and Scholarships

I currently lead and contribute to the research and development of a GenAI handbook and multi-agent solutions designed to boost collaboration and productivity for early-stage startups, particularly operating in remote and hybrid settings. Previously, in my capacity, I was also fully involved in the research, design and development of collaborative tool and workflow for all-remote startups.

Year granted	Award Holder(s)	Funding Body	Title
2022	Prof. Xiaofeng Wang	Free University of Bozen-Bolzano, Italy	Unlock the power of GENErative AI to Support early-stage Innovative Startups (GENESIS)
2024	Prof. Xiaofeng Wang	Free University of Bozen-Bolzano, Italy	Startup Digi-Dojo: A Digital Space Supporting All-Remote Startups towards a Sustainable Way of Working (Digi-Dojo)

Publications

Journal Papers:

(*) **Rafiq, U.**, Wang, X., & Guerra, E. 2025. Data analytics in software startups: Understanding key concepts and critical challenges. *Information and Software Technology*, 180, p.107652. <https://doi.org/10.1016/j.infsof.2024.107652>

Nguyen-Duc, A., Cabrero-Daniel, B., Przybylek, A., Arora, C., Khanna, D., Herda, T., **Rafiq, U.**, Melegati, J., Guerra, E., Kemell, K. K., Saari, M., Zhang, Z., Le, H., Quan, T., & Abrahamsson, P. (2025). Generative artificial intelligence for software engineering—a research agenda. *Software: Practice & Experience*, 55(8), 1695–1725. <https://doi.org/10.1002/spe.70005>

Hooshyar, H., Guerra, E., Melegati, J., Khanna, D., Aldaeej, A., Matturro, G., Zaina, L., Greer, D., **Rafiq, U.**, Chanin, R., & Wang, X. (2023). Impact in software engineering activities after one year of COVID-19 restrictions for startups and established companies. *IEEE Access*, 11, 55178–55203. <https://doi.org/10.1109/ACCESS.2023.3279917>

Peer-Reviewed Conference and Workshop Papers:

Pattyn, F., & **Rafiq, U.** (2024). Smart scaling for software startups through financial requirements prioritization criteria. In 15th International Conference on Software Business (ICSOB 2024), Utrecht, Netherlands, November 18-20, 2024. Lecture Notes in Business Information Processing, vol 539. Springer, Cham

https://doi.org/10.1007/978-3-031-85849-9_35

Wang, X., Edison, H., Khanna, D., & **Rafiq, U.** (2023). How many papers should you review? A research synthesis of systematic literature reviews in software engineering. In 2023 ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM) (pp. 1–6). IEEE.

<https://doi.org/10.1109/ESEM56168.2023.10304863>

(*) Wang, X., Attal, M. I., **Rafiq, U.**, & Hubner-Benz, S. (2023). Turning large language models into AI assistants for startups using prompt patterns. In P. Kruchten & P. Gregory (Eds.), Agile processes in software engineering and extreme programming – Workshops. XP XP 2022 2023 (Lecture Notes in Business Information Processing, vol. 489, pp. 202–214). Springer. https://doi.org/10.1007/978-3-031-48550-3_19

Rafiq, U., Pattyn, F., & Wang, X. (2023). Practitioner views on analytics for software startups: A preliminary guide based on gray literature. In S. Hyrynsalmi, J. Münch, K. Smolander, & J. Melegati (Eds.), Software business. ICSOB 2023 (Lecture Notes in Business Information Processing, vol. 500, pp. 337–348). Springer.

https://doi.org/10.1007/978-3-031-53227-6_22

Rafiq, U., Filippo, C., & Wang, X. (2022). Understanding low-code or no-code adoption in software startups: Preliminary results from a comparative case study. In Product-focused software process improvement. PROFES 2022 (Lecture Notes in Computer Science, vol. 13709, pp. 467–481). Springer. https://doi.org/10.1007/978-3-031-21388-5_27

(*) Wang, X., Hubner, S., Melegati, J., Khanna, D., **Rafiq, U.**, Guerra, E. M., & Morselli, D. (2022). Startup Digi-Dojo: A Digital Space Supporting Practice and Research of Startup Remote Work. In ICSOB Companion.

Rafiq, U., Wang, X., & Zaina, L. (2022). Analytics practices in practice: How software startup companies are applying analytics? In P. Kruchten & P. Gregory (Eds.), Agile processes in software engineering and extreme programming – Workshops. XP XP 2022 2023 (Lecture Notes in Business Information Processing, vol. 489, pp. 93–105). Springer. https://doi.org/10.1007/978-3-031-48550-3_10

Rafiq, U. (2022). Towards understanding analytics in software startups. In Proceedings of the 5th International Workshop on Software-Intensive Business: Towards Sustainable Software Business (pp. 31–38). <https://doi.org/10.1145/3524614.3528632>

Rafiq, U. (2022). Exploring analytics in software startups. 13th International Conference on Software Business Companion (ICSOB-C 2022), Bolzano, Italy, November 8–11, 2022.

(*) **Rafiq, U.**, Melegati, J., Khanna, D., Guerra, E., & Wang, X. (2021). Analytics mistakes that derail software startups. Proceedings of the 25th International Conference on Evaluation and Assessment in Software Engineering (EASE '21), 60–69. <https://doi.org/10.1145/3463274.3463305>

Kemell, K. K., Elonen, A., Suoranta, M., Nguyen-Duc, A., Garbajosa, J., Chanin, R., Melegati, J., **Rafiq, U.**, Aldaeej, A., Assyne, N., &

Sales, A. (2020, August). Business model canvas should pay more attention to the software startup team. In 2020 46th Euromicro Conference on Software Engineering and Advanced Applications (SEAA) (pp. 342–345). IEEE.

<https://doi.org/10.1109/SEAA51224.2020.00063>

Rafiq, U., & Wang, X. (2020). Continuous information monitoring in software startups. In M. Paasivaara & P. Kruchten (Eds.), Agile processes in software engineering and extreme programming – Workshops. XP 2020 (Lecture Notes in Business Information Processing, vol. 396, pp. 352–365). Springer.

https://doi.org/10.1007/978-3-030-58858-8_29

(*) **Rafiq, U.**, Bajwa, S. S., Wang, X., & Lunesu, I. (2017). Requirements elicitation techniques applied in software startups. In 2017 43rd Euromicro Conference on Software Engineering and Advanced Applications (SEAA), Vienna, Austria, 141–144. IEEE.

<https://doi.org/10.1109/SEAA.2017.73>

Book Chapters:

(*) **Rafiq, U.**, Klotz, M., Pattyn, F., Triando, Biasi, M., Wang, X., and Stöckmann, C. (2025). Generative AI for Startups: A Systematic Mapping Study. Accepted for publication in Advances in Software Startups: Engineering, Business and Beyond, Springer Nature Switzerland.

Pattyn, F., **Rafiq, U.**, & Goetz, P. 2024. How Does Product Feature Prioritization Work at Software Startups? In Advances in Software Startups: Engineering, Business and Beyond. Accepted for publication. Springer Nature Switzerland.

Mohsenimofidi, S., Prasad, A. S. R., Zahid, A., **Rafiq, U.**, Wang, X., & Attal, M. I. (2024). Classifying user intent for effective prompt engineering: A case of a chatbot for startup teams. In A. Nguyen-Duc, P. Abrahamsson, & F. Khomh (Eds.), Generative AI for effective software development (pp. 317–329). Springer.

https://doi.org/10.1007/978-3-031-55642-5_15

Language Competence

- Urdu: First Language
- English: Advanced proficiency, certified at C1 level, by Language Center, Free University of Bozen-Bolzano, Italy (2025)
- Italian – Level A1, course from Language Center, Free University of Bozen-Bolzano, Italy (2022)