# Usman Rafiq

## Expertise

- Empirical Software Engineering
- Software Startups
- Academic Teaching
- Other Technical Skills (Programming and Application Development experience using Flutter, ASP.NET, C#, JAVASCRIPT, C, C++, J2SE, and PHP. System and software analysis and design using UML, Technical writing)

## Education

**Ph.D. in Computer Science**
Free University of Bozen-Bolzano **(Italy)**
**Thesis Title:** Understanding Analytics in Software Startups
**Supervisor:** Prof. Dr. Xiaofeng Wang

July 2024

**MS in Computer Science**
Free University of Bozen-Bolzano **(Italy)**
**Thesis Title:** Understanding Requirements Elicitation in Software Startups: An Empirical Study
**Supervisors:** Prof. Dr. Xiaofeng Wang, Prof. Dr. Samuel A. Fricker

Oct 2016 — **95/110 (86.36%)**

**MS in Software Engineering**
Blekinge Institute of Technology, Karlskrona **(Sweden)**

Oct 2016 — **95/110 (86.36%)**

**BS in Software Engineering**
IIU, Islamabad (**Pakistan**)

Oct 2011 — **3.82 / 4.00 CGPA**

**Higher Secondary School Certificate (Pre-Engineering)**
FBISE (**Pakistan**)
**Major:** Pre-Engineering (Mathematics, Physics, Chemistry)

Aug 2006 — **A Grade**

**Secondary School Certificate (Science)**
FBISE (**Pakistan**)
**Major:** Science (Mathematics, Physics, Chemistry, Biology)

Jul 2004 — **A Grade**

## Additional Training

**Academic Program for Entrepreneurship (Bootcamp)**
Strascheg Center for Entrepreneurship, Munich University of Applied Sciences **(Germany)**

Mar 2015

## Work Experience

- **Research Assistant (Assegno di Ricerca -AR) at Free University of Bozen-Bolzano, Italy**
  www.unibz.it

  **Feb 2024 – Present**

  - Support research activities in the needs analysis of systems for remote startups
  - Participate in the prototype of the proposed system
  - Contribute to the evaluation of developed prototypes and support system development
  - Assist in recruiting users for system evaluations to assess the system's effectiveness and usability

- **Graduate Teaching Assistant at Free University of Bozen-Bolzano, Italy**
  www.unibz.it

  **Sep 2022 – May 2024**
  - Participated in academic activities & programming labs for undergrad students of electronics and cyber-physical systems
  - Lead activities related to assessment creation, labs, projects, and course content design
  - Provide ongoing support to software engineering students as an advisor and counselor to help them achieve their learning goals

- **Academic Tutor - Digital Didactics at Free University of Bozen-Bolzano, Italy**
  www.unibz.it

  **Dec 2021 – Feb 2022**
  - Participated in in-house 'Train-the-Trainer' program for professors to utilize technology and tools to teach and evaluate students
  - Participated in a project to institutionalize modern pedagogical technologies to support faculty members
  - Developed and provided support to the university's Online Learning Management System
  - Provided training to faculty members and students on the Online Learning Management System

- **Lecturer/Faculty Member (Software Engineering) at the Department of Computer Science and Software Engineering, IIU, Islamabad, Pakistan**
  www.iiu.edu.pk

  **Feb 2018 – Nov 2019**
  - Taught advanced undergraduate courses such as Software Engineering, Object-Oriented Analysis and Design (with UML), Software Construction, Information Systems Audit, and introductory courses on Programming, such as Object-Oriented Programming, and Introduction to Programming
  - Designed training curricula and conducted lectures, labs, and tutorials
  - Provided student support in engaging with courses and provided academic advising and counseling
  - Supervised various undergraduate computer science projects
  - Served as the moderator of the board of studies for graduate studies
  - Served as a member of the admission test committee and the undergrad final year project evaluation committee

- **Lecturer/Faculty Member (Software Engineering) at Department of Computer Science, CUST, Islamabad, Pakistan**
  www.cust.edu.pk

  **Feb 2017– Jan 2018**
  - Taught various advanced software engineering courses focusing on Object-Oriented Analysis and Design, Object-Oriented Programming, Introduction to Programming, and Software Engineering to undergrad students
  - Served as a departmental quality enhancement cell member and secretary of the curriculum review committee for a bachelor's in software engineering
  - Successfully supervised final-year projects for undergrad students
  - Contributed towards syllabus revision and assessment creation

- **Research Assistant (Software Developer) at Free University of Bozen-Bolzano (Italy)**
  www.unibz.it

  **Oct 2015 – Dec 2015**

  - Participated in developing a software project named "Information radiators for distributed software development", using PHP
  - Supervisor: Dr. Xiaofeng Wang

- **Master Intern - System Integration Analyst at Würth Phoenix Srl, Bolzano (Italy)**
  www.wuerth-phoenix.com

  **Nov 2014 – Mar 2015**
  - Lead a project in interface development between Enterprise Resource Planning (ERP) and Sales Force Automation (SFA)
  - Development of RESTful services in the .NET framework
  - Experience in software development, quality assurance, and performance optimization
  - Development and programming work in C#, Web API, HTTP, and XML technologies

- Experience in technical reporting on performance and load-testing activities

- **System Analyst at Easelomist Inc., Islamabad (Pakistan)**
www.easelomist.com

**Sep 2011 - July 2013**

- Prepared project proposals and worked closely with project management, development, and quality assurance teams
- Developed and implemented business processes, modeling, and prepared presentations for end-users and stakeholders
- Elicited customer-specific and bespoke requirements using several requirements elicitation techniques
- Analyzed elicited requirements, resolved conflicts between stakeholder needs, and specified product and project features
- Designed use cases and user stories
- Managed requirements with IBM's Rational RequisitePro

- **Visiting Faculty Member at the Department of Computer Science and Software Engineering, IIU, Islamabad, Pakistan**
http://www.iiu.edu.pk/

**Jan 2012 – Jan 2013**

- Taught academic courses to undergrad students focusing on Programming Fundamentals, Software Engineering Economics, and Professional Practices
- Conducted training and seminars for the final year undergrad students of software engineering, in collaboration with software companies
- Assisted in various university administrative duties

- **Lab Instructor at the National University of Computer and Emerging Sciences (FAST-NU), Islamabad (Pakistan)**
www.nu.edu.pk

**2012(Jan) – 2013 (Jan)**

- Prepared undergraduate students with first-hand experience with course concepts. Courses include object-oriented analysis and design, introduction to Java, programming fundamentals using C++ and operating systems

- **Teaching Assistant (TA) at Department of Software Engineering, IIU, Islamabad**
www.iiu.edu.pk

**Feb 2011 – Jul 2011**

- Assisted course-responsible professors in course preparation for software requirements engineering in Spring 2011 semester
- Facilitated weekly tutorials, graded modeling assignments, evaluated practice tasks and projects, and held laboratory sessions on IBM's Rational RequisitePro.
- Supervisor: Prof. Dr. Naveed Ikram, Associate Dean, Faculty of Computing, RIU, Islamabad

- **Software Engineer (Undergraduate Intern) at Keystone Software Solutions, Rawalpindi (Pakistan)**
www.keystonesoftware.com

**Aug 2010 – Dec 2010**

- Requirements elicitation using interviews, competitor analysis and prototyping
- Requirements specification according to RUP and IEEE standards
- Business modeling
- Prepared UI prototypes and played the role of liaison between different technological groups

## Recent Publications

- Mohsenimofidi, Seyedmoein, Akshy Sripad Raghavendra Prasad, Aida Zahid, **Usman Rafiq**, Xiaofeng Wang, and Mohammad Idris Attal. "Classifying User Intent for Effective Prompt Engineering: A Case of a Chatbot for Startup Teams." In Generative AI for Effective Software Development, pp. 317-329. Cham: Springer Nature Switzerland, 2024

- Hooshyar, Hosna, Eduardo Guerra, Jorge Melegati, Dron Khanna, Abdullah Aldaeej, Gerardo Matturro, Luciana Zaina, Des Greer, **Usman Rafiq**, Rafael Chanin, Xiaofeng Wang, Juan Garbajosa, Pekka Abrahamsson, Foutse Khomh, And Anh Nguyen-Duc "Impact in software engineering activities after one year of COVID-19 Restrictions for Startups and Established Companies." IEEE Access 11 (2023): 55178-55203

- Wang, Xiaofeng, Mohammad Idris Attal, **Usman Rafiq**, and Sylvia Hubner-Benz. "Turning large language models into AI assistants for startups using prompt patterns." In International Conference on Agile Software Development, pp. 192-200. Cham: Springer Nature Switzerland, 2022

- Wang, Xiaofeng, Henry Edison, Dron Khanna, and **Usman Rafiq**. "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, 2023.

- **Rafiq, Usman**, Frédéric Pattyn, and Xiaofeng Wang. "Practitioner Views on Analytics for Software Startups: A Preliminary Guide Based on Gray Literature." In International Conference on Software Business, pp. 315-323. Cham: Springer Nature Switzerland, 2023.

- **Rafiq Usman**, Cenacchi Filippo, and Xiaofeng Wang. "Understanding Low-Code or No-Code Adoption in Software Startups: Preliminary Results from a Comparative Case Study." Product-Focused Software Process Improvement: 23rd International Conference, PROFES 2022, Jyväskylä, Finland, November 21–23, 2022, Proceedings. Cham: Springer International Publishing, 2022

- **Rafiq Usman,** Exploring Analytics in Software Startups, Proc. of 13th International Conference on Software Business, Bolzano, Italy, November 08-11, 2022, CEUR-WS.org

- Xiaofeng Wang, Hubner Sylvia, Melegati Jorge, Khanna Dron, **Rafiq Usman**, Guerra, Eduardo, & Morselli Daniele: Startup Digi-Dojo: A Digital Space Supporting Practice and Research of Startup Remote Work.: Proc. of 13th International Conference on Software Business, Bolzano, Italy, November 08-11, 2022, CEUR-WS.org

- **Rafiq, Usman**, Jorge Melegati, Dron Khanna, Eduardo Guerra, and Xiaofeng Wang. "Analytics mistakes that derail software startups." In Proceedings of the 25th International Conference on Evaluation and Assessment in Software Engineering, pp. 60-69. 2021.

- **Rafiq Usman**, "Towards Understanding Analytics in Software Startups," 2022 IEEE/ACM International Workshop on Software-Intensive Business (IWSiB), Pittsburgh, PA, USA, 2022, pp. 31-38

- **Rafiq Usman**, Jorge Melegati, Dron Khanna, Eduardo Guerra, and Xiaofeng Wang. "Analytics mistakes that derail software startups." In Evaluation and assessment in software engineering, pp. 60-69. 2021

- Kemell, K.K., Elonen, A., Suoranta, M., Nguyen-Duc, A., Garbajosa, J., Chanin, R., Melegati, J., **Usman Rafiq**., Aldaeej, A., Assyne, N. and 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.2020

- **Rafiq, Usman**, and Xiaofeng Wang. "Continuous Information Monitoring in Software Startups." In International Conference on Agile Software Development, pp. 280-287. Cham: Springer International Publishing, 2020.

- **Rafiq, Usman**, Sohaib Shahid Bajwa, Xiaofeng Wang, and Ilaria Lunesu. "Requirements elicitation techniques applied in software startups." In 2017 43rd Euromicro Conference on Software Engineering and Advanced Applications (SEAA), pp. 141-144. IEEE, 2017

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| **Other Academic Services** | - Reviewer for Special Issue - Information and Software Technology Journal (IST Quatic'23, July 2024)<br>- Served as a reviewer for the journal- Foundations of Computing and Decision Sciences (FCDS)<br>- Peer reviewed for European Conference on Information Systems (ECIS 2023)<br>- Program Committee (12th International Symposium on Information and Communication Technology SOICT 2023)<br>- Program Committee (International Conference on Software Business 2022, Bolzano, Italy)<br>- Program Committee (International Conference on Software Business 2021, Drammen, Norway) |
| **Recent Conference Presentations** | - 23rd International Conference on Product-Focused Software Process Improvement (PROFES), Jyväskylä, Finland (21.-23.11.2022)<br>- 13th International Conference on Software Business (ICSOB), Bolzano, Italy (Nov 08-11, 2022)<br>- 5th International Workshop on Software-intensive Business (hosted by 44th International Conference on Software Engineering, ICSE), Pittsburgh, USA<br>- Evaluation and Assessment in Software Engineering (EASE-2021), Trondheim, Norway<br>- 21st International Conference on Agile Software Development, XP 2020, Copenhagen, Denmark (June 8–12, 2020)<br>- 43rd Euromicro Conference on Software Engineering and Advanced Applications (SEAA), Vienna, Austria (30 August – 1 September 2017) |
| **Invited Talks** | - Invited Speaker for a talk on "XP Conference Contributions to Software" at the 25th International Conference on Agile Software Development (June 6, 2024)<br>- An invited talk (virtual) on "Analytics practices in software startups" to SINTEF Digital (Norway), Europe's Largest independent research organization (Jan 30, 2023)<br>- A research-in-progress presentation of Ph.D. work to Prof. Dr. Ita Richardson (Prof. of Software Quality and Connected Health Technologies, LERO, The Irish Software Research Center, Ireland) (Bolzano, Jan 26, 2023) |
| **Awards/ Achievements** | - Won the travel grant of 1300 USD from ACM's Special Interest Group on Software Engineering (ACM SIGSOFT) to participate in the Student Mentoring Workshop at the 45th International Conference on Software Engineering, Melbourne, Australia, 14-20 May 2023<br>- Received the "The Most Promising Ph.D. Project" award for my Ph.D. research from the 13th International Conference on Software Business (2022)<br>- Recipient of the fully funded doctoral studies at the Free University of Bozen-Bolzano, Italy (2019-2023)<br>- Nominated for the Rector's best teacher award from computer science and software engineering, IIU, Islamabad<br>- Completed dual master's degrees in computer science and software engineering (2016)<br>- Won prestigious "Erasmus Mundus" scholarship for joint master's in software engineering (2013)<br>- Organized and chaired the event, entitled "Speed Programming and Gaming Competition- SPAGCOM" in 2011, hosted by the Department of Software Engineering at IIU, Islamabad<br>- Received high distinction during bachelor studies |
| **Volunteer Work** | - Served as a student volunteer chair at the 13th International Conference on Software Business and helped the program committee to run the conference smoothly. (Nov 08 – Nov 11, 2022), Bolzano, Italy<br>- Contributed to organizing and supporting the 44th International Conference on Software Engineering. (May 21, 2022 - May 29, 2022), Pittsburgh, PA USA<br>- Volunteered session chairs in conducting the 22nd International Conference on Agile Software Development, XP (June 14-18, 2021,) worldwide<br>- Volunteered for flood relief activities during the 2011 & 2015 Pakistan Flooding Disaster |