

Dr. FATIMA SABIR

Assistant Professor of Software Engineering
Department of Computer Science, Faculty of Computing and Information Technology
University of the Punjab
Lahore, Pakistan

(*IF* = 54.48; *Google H-Index* = 8; *i10-Index* = 8, *Google Citations* ≈ 325)



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OBJECTIVE

To serve dynamic, growing and future oriented academia with a willingness to share and learn knowledge in a challenging environment

RESEARCH INTERESTS

Empirical Software Engineering, IoT Systems, Source Code Analysis, Software Evolution, Software Refactoring, Topic Modeling, Natural Language Processing, Pattern and Antipatterns for Web Services, Software Project Management

RESEARCH AWARDS AND HONORS

- **Visting Professor for Ethical Pattern for AI- IVADO Canada July 2026-October 2026** Delivering keynote talk at Quebec Universities to improve the Organizational strategies for Governance (20,000\$)
- **Postdoc Fellowship 2020-21** – Concordia University Canada (*financial support was provided by Mitac Canada and Concordia University Canada worth C\$100,000*)
- **International Research Support Initiative Award 2017** – Higher Education Commission, Pakistan (*US\$ 10,000*)
- **Research Incentive Awards 2024, 2025**– University of the Punjab, Pakistan

PROFESSIONAL EXPERIENCE

Assistant Professor – University of the Punjab, Pakistan

June 26, 2023 – date

- Department of Computer Science, Faculty of Computing and Information Technology (FCIT), University of the Punjab, Pakistan
- Key teaching and research areas include Object Oriented Programming, Topics in Software Engineering, Software Project Management, Reverse Engineering of Source Code, Mining Source code repositories, Theory of programming language, Software Quality Engineering, Requirement Engineering
- Program Coordinator of BS Open and Distance Learning Computer Science
- Curriculum review Committee of M.Phil./Ph.D. Computer Science
- Program Coordinator of BS Computer Science Final Year Project
- Member of Purchase Committee of Department of Computer Science
- Member of Departmental Graduate Admissions Committee for Fall 2023, 2024, 2025, 2026

Assistant Professor – COMSATS University Islamabad, Pakistan

May 09, 2022 – June 26, 2023

- Department of Computer Science, COMSATS University Islamabad, Lahore Campus, Pakistan
- Key teaching and research areas include Object Oriented Programming, Topics in Software Engineering, Software Project Management, Reverse Engineering of Source Code, NLP for Software Engineering
- Teaching area Incharge (*course leader*) for Object Oriented Programming, Software Testing, Software Architecture and Design, Software Quality Assurance
- As course leader, the key responsibilities were managing and designing content of the courses, designing methodologies for assignments and arranging workshops for the students and providing guidelines to course instructors
- Member of undergraduate Final Year Project evaluation committee 2023

Postdoctoral Researcher – Concordia University, Canada

March 07, 2020 – December 08, 2021

- Department of Computer Science and Software Engineering, Gina Cody school of engineering and computer science, Concordia University, Montreal, Canada
- Worked under the supervision of Prof. Dr. Yann-Gaël Guéhéneuc Canada Research Chari Tier I for Empirical Software Engineering for IoT
- Key research areas included Empirical Software Engineering Antipatterns Detection, Topic Modelling, and Feature Identification
- Developed first Open Source IoT Lab after agreement with Apple, Amazon and Leading Companies to provide Source Code access to running different experiments

Assistant Professor – Sharif College of Engineering and Technology, Pakistan

October 18, 2016 – February 29, 2020

- Assistant Professor and Head of Computer Science Department at SCET (affiliated with University of Engineering and Technology, Lahore, Pakistan)
- Key teaching areas include Programming Languages, Object Oriented Programming, Software Engineering, Web Programming, Object Oriented Analysis and Design, Software Project Management, Information Systems
- Curriculum review Committee of BS Software Engineering Program 2019, University of Engineering and Technology, Lahore

Assistant Professor – Lahore Leads University, Pakistan

August 15, 2013 – October 15, 2016

- Department of Computer Science and Information Technology
- Key teaching and research areas include Advanced Web Programming, Software Quality Assurance, Research Methodology for Software Engineering
- Program Coordinator of BS Software Engineering

Visiting Faculty - University of the Punjab, Pakistan

March 2008 – February 2009

October 2011 – June 2013

- Served as visiting lecturer in the various departments of University of the Punjab such as Institute of Business Administration (IBA), Hailey College of Commerce (HCC), Department of Information Technology and Department of Business Administration of PU Gujranwala Campus
- Taught various courses like Data Warehousing and Data Mining, Visual Programming, Management Information System, E-Commerce, Computer Applications in Business

Incharge IT and Communication Skills Departments – Govt. of the Punjab, Pakistan

August 28, 2002 – August 30, 2007

- DIH Social Welfare Sanatkar (Gujranwala) under Government of the Punjab
- As Incharge IT Department at Sanatkar, conducted short courses on Programming using Microsoft Visual Basic, Java, C++, and SQL, Graphic designing using Corel Draw, Adobe, Macromedia Dreamweaver, Accounting Information System

- As Incharge Communication Skills Department at Sanatzar, conducted short courses on Spoken English, Business English Communication and Report Writing

ACADEMIC QUALIFICATION

Concordia University, Montreal, Canada

Post doctorate – Computer Science

March 2020 – December 2021

- Postdoc competed under the supervision of Prof. Dr. Yann-Gaël Guéhéneuc, Canada Research Chari Tier I for Empirical Software Engineering for IoT
- Key research areas included Empirical Software Engineering Antipatterns Detection, Topic Modelling, and Feature Identification
- Developed first Open Source IoT Lab after agreement with Apple, Amazon and Leading Companies to provide Source Code access to running different experiments.

COMSATS University Islamabad, Pakistan

PhD (Computer Science)

2014 – 2019

- Department of Computer Science, CUI Lahore Campus
- Research Fellowship at Ecole École Polytechnique de Montréal, Canada (2017)
- Worked under the supervision of Prof. Dr. Yann-Gaël Guéhéneuc and Dr. Naouel Moha in Canada and Dr. Ghulam Rasool in Pakistan
- *PhD Thesis Title:* Detection of Antipatterns from Service Oriented Architecture
- CGPA **3.00**, **1st** Division

MS (Computer Science)

2009 – 2012

- Department of Computer Science, CUI Lahore Campus
- Research focused on Software Engineering
- *MS Thesis Title:* Fully Distributed SCRUM with Better Team Productivity
- CGPA **3.02**, **1st** Division

University of the Punjab, Pakistan

Master of Information Technology (MIT)

2005 – 2007

- Department of IT, Punjab University Gujranwala Campus
- CGPA **3.00**, **1st** Division

Bachelor of Science (B.Sc.)

1999 – 2001

- Government College for Women, Satellite Town, Gujranwala, Pakistan

RESEARCH PROFILE

Web of Science Journal Publications

1. Minani, J. B., Trabelsi, I., El Fellah, Y., Sabir, F., Kuradusenge, M., Guéhéneuc, Y. G., & Moha, N (2026)"TGenAI: An LLM-based Approach for Functional End-to-End Test Generation for IoT Systems." *Internet of Things* (2026) [doi10.1016/j.iot.2026.102066](https://doi.org/10.1016/j.iot.2026.102066) [IF=7.1, Q1]
2. K. Mahmood, J. B. Minani, G. Rasool, **F. Sabir**, F. Jaafar, and Y. -G. Guéhéneuc (2026), "Exploring the Impacts of Antipatterns on Object-Oriented, Service-Oriented, and Mobile-Oriented Systems", *Software: Practice and Experience*, Vol. 56, No, 2, pp. 190-217. [doi10.1002/spe.70030](https://doi.org/10.1002/spe.70030). [eISSN: 1097-024X] [IF=2.7, Q1]
3. J. B. Minani, **F. Sabir**, N. Moha, Y. -G. Guéhéneuc and T. Masuda (2025), "TISSEA: A Framework for Testing IoT Systems Based on Technical Software Engineering Aspects", *IEEE Internet of Things Journal*, Vol. 12, No. 22, pp. 48787-48802. [doi10.1109/jiot.2025.3609240](https://doi.org/10.1109/jiot.2025.3609240). [eISSN: 2327-4662] [IF=8.9, Q1]
4. J. B. Minani, Y. El Fellah, **F. Sabir**, N. Moha, Y. -G. Guéhéneuc, M. Kuradusenge and T. Masuda (2025), "IoT Systems Testing: Taxonomy, Empirical Findings, and

- Recommendations”, *The Journal of Systems and Software*, Vol. 226 (112408), pp. 1-24. [doi:10.1016/j.jss.2025.112408](https://doi.org/10.1016/j.jss.2025.112408) [eISSN: 1873-1228] [IF=4.1, Q1]
5. N. Khezemi, J. B. Minani, **F. Sabir**, N. Moha, Y. -G. Guéhéneuc, and G. El Boussaidi (2024), “A systematic literature review of IoT system architectural styles and their quality requirements”, *IEEE Internet of Things Journal*, Vol.11, No. 23, pp. 37599-37616. [doi:10.1109/JIOT.2024.3435496](https://doi.org/10.1109/JIOT.2024.3435496) [eISSN: 2327-4662] [IF=8.9, Q1]
 6. J. B. Minani, **F. Sabir**, N. Moha, and Y. -G. Guéhéneuc (2024), “A Systematic Review of IoT Systems Testing: Objectives, Approaches, Tools, and Challenges”. *IEEE Transactions on Software Engineering*, Vol. 50, No. 4, pp. 785-815. [doi:10.1109/TSE.2024.336361](https://doi.org/10.1109/TSE.2024.336361) [eISSN: 1939-3520] [IF=5.6, Q1]
 7. J. B. Minani, **F. Sabir**, N. Moha, and Y. -G. Guéhéneuc (2023), “A multimethod study of Internet of Things systems testing in industry”. *IEEE Internet of Things Journal*, Vol. 11, No. 1, pp. 1662-1684. [doi:10.1109/JIOT.2023.3291233](https://doi.org/10.1109/JIOT.2023.3291233) [eISSN: 2327-4662] [IF=9.2, Q1]
 8. K. Mahmood, G. Rasool, **F. Sabir**, and A. Athar (2023), “An empirical study of web services topics in web developer discussions on stack overflow”. *IEEE Access*, Vol. 11, pp. 9627-9655. [doi:10.1109/ACCESS.2023.3238813](https://doi.org/10.1109/ACCESS.2023.3238813) [eISSN: 2169-3536] [IF=3.6, Q2]
 9. G. Uddin, **F. Sabir**, Y. -G. Guéhéneuc, O. Alam, F. Khomh (2021), “An empirical study of IoT topics in IoT developer discussions on Stack Overflow”. *Empirical Software Engineering*, Vol. 26, No. 121pp. 1-45. [doi:10.1007/s10664-021-10021-5](https://doi.org/10.1007/s10664-021-10021-5) [eISSN: 1573-7616] [IF=2.52, Q2]
 10. **F. Sabir**, Y. -G. Guéhéneuc, F. Palma, N. Moha, G. Rasool, and H. Akhtar (2021), “A mixed-method approach to recommend corrections and correct REST antipatterns”. *IEEE Transactions on Software Engineering*, Vol. 48, No. 11, pp. 4319-4338. [doi:10.1109/TSE.2021.3117023](https://doi.org/10.1109/TSE.2021.3117023) [eISSN: 1939-3520] [IF=6.27, Q1]
 11. **F. Sabir**, F. Palma, G. Rasool, Y. -G. Guéhéneuc, and N. Moha (2019), “A systematic literature review on the detection of smells and their evolution in object-oriented and service-oriented systems”, *Software: Practice and Experience*, Vol. 49, No. 1, pp. 3-39. [doi:10.1002/spe.2639](https://doi.org/10.1002/spe.2639) [eISSN: 1097-024X] [IF=1.79, Q2]
 12. **F. Sabir**, G. Rasool, and M. Yousaf (2017), “A lightweight approach for specification and detection of soap anti-patterns”, *International Journal of Advanced Computer Science and Applications*, Vol. 8, No. 5, pp. 455-467. [doi:10.1022/ijacsa.85.2222](https://doi.org/10.1022/ijacsa.85.2222) [eISSN: 2156-5570] [IF=0.9, Q3]
 13. M. R. J. Qureshi, S. A. Alshamat and **F. Sabir** (2014), “Significance of The Team Work in Agile Software Engineering”, *Science International (Lahore)*, Vol. 26, No. 1, pp. 117-120. [doi:10.48550/arXiv.1408.6130](https://doi.org/10.48550/arXiv.1408.6130) [ISSN:1013-5316] [ISI-Indexed]
 14. M. R. J. Qureshi, and **F. Sabir** (2013), “A comparison of model view controller and model view presenter”. *Science International (Lahore)*, Vol. 25, No. 1, pp. 7-9. [doi:10.48550/arXiv.1408.5786](https://doi.org/10.48550/arXiv.1408.5786) [ISSN:1013-5316] [ISI-Indexed]
 15. **F. Sabir**, A. U. Khan, M. Q. Rafique, and M. Ali (2012), “Improved Scrum Model with SDLC”, *Journal of Basic and Applied Scientific Research*, Vol. 2, No. 7, pp. 6647-6656. [ISSN: 2090-4304] [ISI-Indexed]

Conference Papers

1. J. B. Minani, Y. El Fellah, S. Ahmad, **F. Sabir**, N. Moha, and Y. -G. Guéhéneuc (2024) “An Exploratory Study on Code Quality, Testing, Data Accuracy, and Practical Use Cases of IoT Wearables”, *In the proceedings of 7th Conference on Cloud and Internet of Things (CIoT)*, October 29-31, 2024, Montreal, QC, Canada, pp. 1-5, [doi:10.1109/CIoT63799.2024.10756966](https://doi.org/10.1109/CIoT63799.2024.10756966)

2. J. B. Minani, **F. Sabir**, Y. El Fellah, and N. Moha (2024). "Towards an Automated Approach for Testing IoT Devices". *In the proceedings of ACM/IEEE 6th International Workshop on Software Engineering Research & Practices for the Internet of Things (SERP4IoT)*, April 20, 2024, Lisbon, Portugal.  [10.1145/3643794.3648350](https://doi.org/10.1145/3643794.3648350)
3. J. B. Minani, **F. Sabir**, Y. El Fellah, and N. Moha (2023). "Taxonomy for IoT Systems Testing: Practical Guidance for Practitioners", *In the proceedings of IEEE/ACM 5th International Workshop on Software Engineering Research & Practices for the Internet of Things (SERP4IoT)*, May 20, 2023, New Jersey, USA.  [10.36227/techrxiv.170327336.64756855/v1](https://doi.org/10.36227/techrxiv.170327336.64756855/v1)

Research Projects Awarded

1. "Syntactic and Semantic Correction of Linguistic Antipatterns in Web Services" (2025-26), A research project granted by University of the Punjab, Lahore, Pakistan, worth of Rs. 0.3 million.
2. "FDCBA: A Recommendation System for the Improvement of Bio Informatics API" (2024-25), A research project granted by University of the Punjab, Lahore, Pakistan, worth of Rs. 0.2 million.

PhD Supervisions

1. Khalid Mahmood (2025), Effect of Evolution of Antipatterns for Client Web Applications, *PhD graduated from COMSATS University Islamabad, Pakistan (Co-Supervisor)*
2. Jean-Baptist Minani (2025), End to End Testing for IoT Systems, *PhD graduated from Gina Cody School of Computer Science and Software Engineering, Concordia University, Montreal, QC, Canada (Co-Supervisor)*

MS/M.Phil. Supervisions

1. Tehreem Fatima (2026), Vulnerable Feature Prediction in IoT Systems, *MS thesis in progress, Department of Computer Science, Faculty of Computing and IT, University of the Punjab, Pakistan (Supervisor)*
2. Fiza Kanwal (2026), Flaws detection in Digital Twin- 2025, *MS thesis in progress, Department of Computer Science, Faculty of Computing and IT, University of the Punjab, Pakistan (Supervisor)*
3. Iqra Riyasat (2026), Automated Test Code Generation for security and reliability of IoT wearables, *MS thesis in progress, Department of Computer Science, Faculty of Computing and IT, University of the Punjab, Pakistan (Supervisor)*
4. Nour Khezemi (2024), A Complete and Semi-Automated Migration Approach for IoT Legacy Monolithic Systems to Microservices Architecture, *MS student graduated from École de technologie supérieure - ÉTS Montréal, Montreal, QC, Canada (Co-Supervisor)*
5. Ayesha Inayat (2024), Identification of Technical Debt from Requirements to Deployment in IOT Base Applications, *MS student graduated from Department of Computer Science, COMSATS University Islamabad Lahore Campus (Co-Supervisor)*
6. Sabahat Atta (2023), Recovery of Anti-patterns from Micro Services, *MS student graduated from Department of Computer Science, COMSATS University Islamabad Lahore Campus (Co-Supervisor)*
7. Maham Saleem (2023), Good or Bad: Design Principles for Resolving Maintainability Issues for Micro Services, *MS student graduated from Department of Computer Science, COMSATS University Islamabad Lahore Campus (Co-Supervisor)*
8. Zoha Ejaz (2023), Recommendation and Maintainability Issues in Microservices, *MS student graduated from Department of Computer Science, COMSATS University Islamabad Lahore Campus (Co-Supervisor)*
9. Farrukh Ijaz (2022), Web API Evolution Pain on Client Side, *MS student graduated from Department of Computer Science, COMSATS University Islamabad Lahore Campus (Co-Supervisor)*

10. Hina Naz (2016), Communication challenges and their mitigation strategy in globally distributed Projects, *MS student graduated from Department of Computer Science, Lahore Leads University (Supervisor)*

BS Supervisions

1. Junaid Razzaq and Waseem Abbas (2019), Are the Bio Informatics API Well Designed: Detection of Antipatterns from Bio Informatics APIs
2. Salman Gul and Nabeel Riaz (2019), Android Applications for Kids Age Less Than 10: A Recommendation System for Parents

Reviewing Profile for Journals and Conferences

- Information and Software Technology (IST)
- Software Quality Journal (SQJ)
- Journal of Systems and Software (JSS)
- Journal of Software Practice and Experience
- International Conference on Software Engineering (ICSE)
- IEEE International Working Conference on Source Code Analysis and Manipulation (SCAM)
- IEEE International Conference on Software Maintenance and Evolution, Early Research Achievements (ICSME-ERA)
- IEEE Conference on Software Maintenance, Reengineering and Reverse Engineering (CSMR-WCRE)

PROFESSIONAL and RESEARCH AFFILIATIONS

- Program Committee member within the research paper track of International Conference on Software Maintenance and Evolution (ICSME),2026.
- Program Committee member within the research paper track of International Conference on Software Architecture (ICSA),2026
- Program Committee member within the research paper track of International Conference on Software Analysis, Evolution and Reengineering (SANER),2026
- Junior Program Committee member within the research paper track of International Conference on Technical Debt (TechDebt),2025.
- Program Committee member within the research paper track of International Conference on Software Maintenance and Evolution (ICSME),2025.
- Program Committee member within the technical paper track of Mining Software Repositories (MSR) 2025
- Program Committee member within the Junior Program Committee track of Mining Software Repositories (MSR) 2023
- Committee Member in Shadow PC committee within the Shadow Program Committee-track of Mining Software Repositories (MSR) 2021
- Member Board of Studies (BoS), University of Engineering and Technology, Lahore

PERSONAL PROFILE

- | | |
|---------------------|--|
| ■ Husband Name | Dr. Sajid Nazir |
| ■ Date of Birth | December 10, 1982 |
| ■ Marital Status | Married |
| ■ Domicile | Lahore, Punjab |
| ■ NIC # | 34101-8245965-4 |
| ■ Countries visited | Canada, Qatar, UAE, Saudi Arabia, Uzbekistan |

REFERENCES

Prof. Dr. Yann-Gaël Guéhéneuc

Department of Computer Science and Software Engineering
Gina Cody School of Engineering and Computer Science
Concordia University, Montréal, QC, Canada
yann-gael.gueheneuc@concordia.ca

Professor Dr. Foutse Khomh

Department of Computer Engineering and Software Engineering
Ecole Polytechnique Montréal, Montréal, QC, Canada
foutse.khomh@polymtl.ca

Professor Ghulam Rasool

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