DR. SAFDAR AQEEL SAFDAR

Lead IT Architect / Researcher

A results-driven computer scientist with 10+ years of experience in software design & development, IT architecture, machine learning, and cloud infrastructure. Adept in utilizing excellent analytical and problem-solving skills to deliver novel solutions for R&D and industrial projects. Proven track record of effectively leading cross-functional teams to achieve goals and exceed expectations. Strong communicator with a customer-first mindset, able to explain complex ideas in a clear and understandable manner. A lifelong learner with academic achievements reflecting continuous learning journey.

+47 90215339 | safderaqeel@yahoo.com | Kalbakkveien 13A, 0953, Oslo, Norway | Norwegian & Pakistani (Dual Citizen)

Work Experience

Lead IT Architect / Solution Architect / Software Engineer

- DNB Bank ASA, Norway
- ***Lead IT Architect*** → July 2021 – Present
- ***Solution Architect*** → August 2018 – June 2021

Role description: Currently I am working as a Lead IT Architect in the area of Know Your Customer (KYC) where I am mainly responsible for defining the blueprint/roadmap for KYC area, managing/prioritizing future development, and leading a project related to a group-wide KYC solution for DNB (i.e., for all business units globally). Before that I worked as a hands-on Solution Architect during which I worked with a wide range of tasks in different projects such as designing and developing APIs and event hub platform, CI/CD, AWS cloud infrastructure, and developing solution architectures for various products in addition to assessing the feasibility of new technologies such as Kubernetes, Kafka, and cloud services. Moreover, I also get to participate in enterprise-level activities such as developing IT strategy for DNB.

Ph.D. Research Fellow

- Simula Research Laboratory, Norway
- July 2015 – June 2018

Role description: I worked as a Ph.D. Research Fellow from July 2015 up till June 2018 at Simula Research Laboratory, Oslo, Norway. The object of my Ph.D. thesis was to improve the post-deployment configuration experience for Cyber-Physical System Product Lines in collaboration with Cisco, Norway. More specifically, capturing the patterns of configurations in form of configuration rules and recommending configurations for interacting products using machine learning and multi-objective search algorithms. I also participated in research activities such as paper reviews, discussions, and reviews for international conferences and journals.

Research Fellow

- QUEST Lab, Pakistan
- June 2013 – June 2015

Role description: I worked as Research Fellow from June 2013 to June 2015 at QUEST lab, Islamabad, Pakistan. During this tenure, I worked on industrial problems with the collaboration of other senior researchers. I planned and conducted controlled experiments and wrote a number of research papers. I also participated in research activities such as paper reviews, experiments, discussions, and peer reviews in addition to organizing international conferences, workshops and industry meetups.

Public Relation Officer / Co-Founder

- Sublime, Pakistan
- January 2012 – May 2013

Role description: I worked as Public Relation Officer at Sublime Pakistan (An event management company) where my responsibility was to interact with the public. We organized a number of formal and informal events in different cities of Pakistan.

Founder

- The Softix, Pakistan
- June 2012 – Jan 2014

Role description: During my education, I founded another startup "The Softix" which was providing IT services related to building web solutions to the local customers. I was managing a small team 5-6 DevOps engineers.

Notable Projects

Industrial Projects

- **Designing and Developing a Group-Wide KYC Solution:** In this project, I worked as a lead architect who is responsible for making all technical/architectural decisions for the project. For this project, we purchased a SAAS solution from Fenergo and integrated it with DNB internal systems from approximately 10 different domains using APIs and Event based integration patterns.

Education

IT Architect (Designed for industry professionals)

- University of Oslo & DNB Bank ASA, Norway
- 2018 – 2021

Ph.D. in Software Engineering/Computer Science

- University of Oslo, Oslo, Norway
- 2015 – 2020

MS in Computer Science

- National University of Computer & Emerging Sciences, (FAST-NU), Islamabad, Pakistan
- 2013 – 2015
- GPA 3.8/4.0

BS in Computer Science

- National University of Computer & Emerging Sciences, (FAST-NU), Islamabad, Pakistan
- 2009 – 2013
- GPA 3.1/4.0

Technical Skills

Programing languages

- Java
- Python, R, C#, C++, PHP

Cloud, infrastructure, and tools

- AWS cloud services
- Git, Docker, Jenkins, Grafana
- Kafka
- Kubernetes

Programming tools

- IntelliJ
- Eclipse, PyCharm, R-Studio,
- MS Visual Studio, Dreamviewer

Modeling languages

- UML, UML Profiles, Feature Model
- CVL, BVR

Modeling tools

- IBM RSA, MagicDraw, Papyrus, Enterprise Architect, Pure::Variants
- CVL tool, BVR tool

Testing tools

- Junit, Nunit, Selenium, Sikuli, RBF

Machine learning and statistics tools

- Weka, R-Studio, IBM SPSS

Other tools

- Jira, Confluence

Personal Skills

- Precise and concise communication
- Problem solving
- Keen observer and details oriented
- Quickly learner and a good teacher
- Team player but don't mind working alone
- Entrepreneurial & leadership skills

Designing and Developing Event Hub Platform: In this project, I worked as a solution architect/software engineer to design and develop an event hub. More specifically, we used MSK (AWS managed service for Kafka) and combined with various components from Confluent (e.g., schema registry and rest proxy) in addition to building our own components to build a platform that can be used by multiple teams to produce and consume events within the organization.

- **Personal Finance Management (PFM):** In this project, I worked as a solution architect and helped the team to conduct a POC using an insight engine by Personnetics and AWS services in addition to designing the target solution.
- **Infrastructure:** As part of various teams at DNB including CPP, ShaSL, PM, CCOE, and Integration Family Flow, I helped to set up and manage AWS accounts, Jenkins, Bitbucket, and so on.
- **APIs Development:** As part of ShasSL, CPP, and PM teams, I get to work with API design, development, testing, and deployment within AWS cloud environment.

Research Projects

- **Post-Deployment Configuration Recommendation:** In this project, we proposed a multi-objective search-based technique that recommends the configurations for a system of systems to ensure the correct behavior of the system using software constraints. The proposed approach is published in a journal paper TOSEM-2021.
- **Facilitating Automated Configuration of CPS Product Lines:** In this project, we proposed a conceptual framework to support the automated configuration of CPS product lines, which involves variability modeling, constraint specifications, and different automated functionalities of a configuration tool. The proposed framework is published in a journal paper SoSym-2020.
- **Mining Cross Product Line Rules:** In this project, we proposed a technique, which combines machine learning and multi-objective search algorithms to mine the rules specifying the abnormal behavior of the system. The results are published in one conference paper at GECCO-2017 and a journal paper in ASE-J-2019.
- **Variability Modeling for Cyber-Physical Systems (CPSs):** In this project, we proposed a set of variation points and modeling requirements to capture the variabilities of *CPS* product lines. Further, we evaluated four existing variability modeling techniques based on the framework. Results of this project are published in a conference publication at SAM-2016.
- **Evaluating UML Modeling Tools:** In this project, we evaluated the capabilities of UML modeling tools in terms of modeler's productivity using a controlled experiment. Evaluation results are published in a conference publication at ECMFA-2015.

Selected Publications/Research Works

- Improving Post-Deployment Configuration of Cyber-Physical Systems Using Machine Learning and Multi-Objective Search (Ph.D. Thesis), **Safdar Aqeel Safdar**, Published by University of Oslo, Norway, 2021
- Recommending Faulty Configurations for Interacting Systems Under Test Using Multi-Objective Search, **Safdar Aqeel Safdar**, Tao Yue, Shaukat Ali, Published in ACM Transactions on Software Engineering and Methodology (TOSEM) 2021
- Quality Indicators in Search-based Software Engineering: An Empirical Evaluation, Shaukat Ali, Polo Arcaini, Dipesh Pradhan, **Safdar Aqeel Safdar**, Tao Yue, Published in ACM Transactions on Software Engineering and Methodology (TOSEM) 2020
- A Framework for Automated Multi-Stage and Multi-Step Product Configuration of Cyber-Physical Systems, **Safdar Aqeel Safdar**, Hong Lu, Tao Yue, Shaukat Ali, Kunming Nie, Published in the International Journal of Software and Systems Modeling (SoSym), 2020
- Using multi-objective search and machine learning to infer rules constraining product, **Safdar Aqeel Safdar**, Hong Lu, Tao Yue, Shaukat Ali, Published in the International Journal of Automated Software Engineering (ASE), 2019
- Mining Cross Product Line Rules with Multi-Objective Search and Machine Learning, **Safdar Aqeel Safdar**, Hong Lu, Tao Yue, Shaukat Ali, published in Genetic and Evolutionary Computation Conference, GECCO, 2017.
- Evaluating Variability Modeling Techniques for Supporting Cyber-Physical System Product Line Engineering, **Safdar Aqeel Safdar**, Tao Yue, Shaukat Ali, Hong Lu published in System Analysis and Modeling Conference, SAM, 2016.
- An Empirical Evaluation of UML Modeling Tool- An Experiment, **Safdar Aqeel Safdar**, Muhammad Zohaib Iqbal, Muhammad Uzair Khan published in European Conference on Modeling Foundations and Applications, 2015
- A Comparative Study of UML Modeling Tools (MS Thesis), **Safdar Aqeel Safdar**, 2015

Languages

- English (Proficient)
- Norwegian (A2 Level)
- Urdu (Mother tongue)

Activities, Honors, and Awards

- Very High Distinction (Silver Medalist, second highest) in MS degree
- BS degree partially (50%) funded by Punjab Educational Endowment Fund (PEEF) Scholarship
- MS degree fully funded by ICT R&D, Pakistan
- A fully funded invited talk at mpm4cps workshop, Netherlands
- Regarded as a high achiever in the university magazine (2015)
- Student volunteer in an international conference (ICET 2014)
- Volunteer in Software Tester Meetup at FAST-NU (2014)
- Participated in a technical event (NASCON-2013) as IT head at FAST-NU
- Conducted several workshops of basic-level Asp.Net and PHP at FAST-NU

Research Interests

- Machine Learning
- Product Line Engineering
- Search-based Software Engineering
- Model-driven Software Engineering
- Model-based Testing
- Empirical Software Engineering

Academic Services

Reviewed papers for several well-reputed international journals and conferences including as a reviewer and sub-reviewer.

References

Mr. Atif Usman (Fagleder Tech)

- atif.usman@dnb.no
- +47 469 07 409
- Worked under @ DNB

Mr. Paul Arne J Kristensen (Senior Fagleder Tech)

- paul.arne.kristensen@dnb.no
- +47 928 97 154
- Coach/Program Leader @ DNB

Dr. Shaukat Ali (Chief Research Scientist)

- shaukat@simula.no
- +47 474 66 831
- Ph.D. Advisor @ Simula