



# SAFDAR AQEEL SAFDAR

## Tech Innovator & Architect Of Change

A results-driven computer scientist with 12+ years of experience in software design and 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

### WORK EXPERIENCE

- **Lead IT Architect** Aug 2018 – Present

#### **DNB BANK / Oslo, Norway**

- Enterprise-Level IT Strategy: Contributed to developing DNB's IT strategy, ensuring technology initiatives aligned with the long-term organizational vision.
- KYC & Customer Onboarding Architecture: Led the architecture and roadmap for KYC and customer onboarding solutions, driving regulatory compliance and operational efficiency across global business units.
- Global KYC Solution Implementation: Designed and implemented a standardized KYC platform across DNB's global business units, ensuring seamless customer verification, risk assessment, and compliance with evolving financial regulations.
- Corporate Lending – Integration Architecture: Defined integration principles, metadata standards, and integration patterns (event-driven, API-based, and batch processing) to enable seamless interoperability between Snowflake, Kafka, Salesforce, core banking systems, and other DNB systems, enhancing data consistency and operational agility.
- Event Hub Platform: Designed and developed a high-performance Kafka-based platform, enabling real-time data exchange and scalable event-driven workflows across the DNB.
- API-First Approach: Architected and deployed RESTful APIs using Java and Python on AWS infrastructure, optimizing secure data exchange and integrating third-party compliance services.
- CI/CD & DevOps Enablement: Spearheaded the implementation of CI/CD pipelines, reducing deployment time and enhancing software quality through automation across multiple projects/teams.
- Cloud & Infrastructure Optimization: Managed and optimized AWS cloud infrastructure, leveraging cloud-native services to enhance performance, security, and cost efficiency.
- Solution Architecture: Designed and implemented resilient, scalable, and secure architectures across multiple business domains, including KYC, customer onboarding, and corporate lending, ensuring regulatory compliance, operational efficiency, and seamless user experiences.
- Technology Evaluation & Adoption: Assessed and introduced emerging technologies (Kubernetes, Kafka, cloud services, DevOps tools) to enhance system performance, scalability, and compliance capabilities.

- **Ph.D Research Fellow** Jul 2015 – Sep 2020

#### **Simula Research Laboratory / Oslo, Norway**

- Collaboration: Collaborated with industrial partners like Cisco Norway and various international researchers to conduct the research.
- Research Articles: Published 4 journal and 2 conference articles along with many technical reports in international journals and conferences.
- Experimentation: Designed and executed various experiments to test my research hypotheses and applied my research in the industry settings.
- Algorithms Development: Designed and implemented machine learning and evaluation algorithms for different research problems
- Academic Services: Presented my research at conferences and workshops and reviewed articles for international conferences and journals, contributing valuable insights to the academic community.

### EDUCATION

- **IT Architecture** 2018 – 2021

#### **University of Oslo (UiO), Norway**

A post graduation masters program especially designed for industry professionals in collaboration with industry partners and UiO.

- **Ph.D. in Software Engineering** 2015 – 2020

#### **University of Oslo (UiO), Norway**

Ph.D research was focusing on applications of machine learning and AI techniques for software engineering problems.

- **MS in Computer Science** 2013 – 2015

#### **National University of Computer & Emerging Sciences, (FAST-NU), Islamabad, Pakistan**

The master thesis research was focusing on model driven software engineering in different context such as testing.

- **BS in Computer Science** 2009 – 2013

#### **National University of Computer & Emerging Sciences, (FAST-NU), Islamabad, Pakistan**

The final year project was about building an ERP solution for hospitals using PHP and Oracle.

### TECHNICAL SKILLS

#### **Programming**

- Java
- Python, Kotlin, 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

## WORK EXPERIENCE CONT.

- **Research Fellow** Jul 2013 – Jun 2015  
**QUEST Lab / Islamabad, Pakistan**
  - **Collaboration:** Collaborated with various international researchers to conduct the research.
  - **Research:** Conducted research on Model-driven Software Engineering and published 1 conference article besides contributed to others' research.
  - **Experimentation:** Designed and executed human-based experiments to test my research hypotheses.
  - **Organised Conference:** Lead and organised an international three days conference with the help of student volunteers. Also, organized several industry professionals meetups focusing on software testing.
  - **Academic Services:** Contributed to several research discussions, peer reviews along with reviewing the articles for international conferences and journals.
- **Co-Founder** Jun 2012 – Jun 2013  
**Sublime / Islamabad, Pakistan**
  - **Business Development:** Generate leads and acquire customers
  - **Events Management:** Organized a number of formal and informal events in different cities of Pakistan.
  - **Vendors Management:** Identified vendors and negotiated contracts while controlling costs and ensuring service delivery.
- **Technical Co-Founder** Jun 2012 – Jun 2013  
**The Softix / Islamabad, Pakistan**
  - **Business Development:** Spearhead efforts to acquire customers
  - **Financial Management:** Oversee budgeting and financial planning
  - **Team Building & Management:** Managed a small team of 5-6 DevOps engineers.
  - **Web Development:** Contributed to the projects development

## 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.
- **Corporate Lending Transformation:** In this program, I worked as Integration Architect where I defined integration principles and standards for corporate lending transformation program, facilitating seamless interoperability between platforms like Snowflake, Kafka, Salesforce, and core banking systems. More over, I designed and implemented various integrations using event-driven, API-based, and batch integration patterns to improve data consistency and operational efficiency across DNB's global business units.
- **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 ShaSL, CPP, and PM teams, I get to work with API design, development, testing, and deployment within AWS cloud environment.

## 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

## ACTIVITIES AND HONORS

- 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

## HOBBIES & INTERESTS

- Traveling Around the World
- Painting Landscapes using Acrylic Colours
- Coffee & Chocolate Enthusiast
- Food Lover at Core
- Racket Sports
- Mountains and Beaches

## LANGUAGES

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

## REFERENCES

### Mr. Atif Usman (Sr. Fagleder Tech)

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

### Mr. Even Sævareid (Sr. Enterprise Architect)

- even.savareid@dnb.no
- +47 918 95 636
- Reporting Manager @ DNB

### Dr. Shaukat Ali (Chief Research Scientist)

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

## NOTABLE PROJECTS CONT.

### 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

- 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