Saad **Ur Rehman**

Software Engineer · Application Designer · (C++, C#, Fortran)

Munich, Germany

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Summary

An experienced software engineer with a passion for developing innovative and robust software solutions that expedite the efficiency and effectiveness of organizational success. Well-versed in writing code in C++, C# and Fortran to create, maintain and upgrade large-scale commercial software systems. Took part in NERC'18 to design, build and program an autonomous robot.

Work Experience

BMW Group via Bertrandt

Munich, Germany

Software Engineer

Jan. 2023 - Present

- Software development in C++ 17 as a partner of the BMW group to improve driving simulators.
- Develop and design new features for the service in C++ 17 on linux platform.
- Design and write unit tests to ensure code reliability and performance.

Afiniti

Islamabad, Pakistan

Software Engineer II

Nov. 2022 - Present

- Work as part of the development team for ACDSS backend reporting service.
- Develop and design new features for the service in C++ 17 on Centos 7 linux platform.
- Maintain existing software and fix any new or legacy bugs.

LMKR

Islamabad, Pakistan

Application Designer

Sept. 2021 - Nov. 2022

- Developed and maintained new software solutions in C++, Fortran and C#, using Microsoft Visual Studio and Intel Fortran Compiler.
- Collaborated in all the different project phases, from defining technical and user requirements, through to planning, quality and testing.
- Created conceptual architecture and develop solution options that match the clients' requirements.
- Partnered with cross-functional technology teams to integrate solutions.
- Coordinated, collaborated and worked with offshore and global teams to develop, brand and publish solutions.

Bentley Systems

Islamabad, Pakistan

Associate Software Engineer

Dec. 2019 - Aug. 2021

- Worked as a part of the development team for Bentley's AutoPIPE, which is an advanced software for nuclear piping design and stress analysis.
- Developed and maintained new AutoPIPE features in Fortran 77 and C++ (Intel Fortran Compiler and MS Visual Studio 2015).
- Prepared software design specifications for new features.
- Followed the software development life-cycle.
- Troubleshooted, debugged and upgraded existing AutoPIPE features.
- Source control with Microsoft TFS and Git.
- Followed Scrum and Agile practices.
- Investigated into design and stress analysis of piping systems.

Bentley Systems

Islamabad, Pakistan

Research & Development Trainee

July. 2019 - Nov. 2019

- Worked with the Quality Assurance (QA) team for Bentley's AutoPIPE.
- Updated validation and verification calculations for AutoPIPE using PTC Mathcad.
- Designed and analyzed several piping and vessel models in both AutoPIPE Nuclear and AutoPIPE Vessel.
- Carried out Blackbox Testing of AutoPIPE Nuclear and AutoPIPE Vessel.
- Developed calculation routines for slug flow feature in Fortran 77.

Technical Skills

C++ Programming	Modern C++ 11 / 14 /17, STL containers, algorithms, data structures, pointers / memory management.
C# Programming	Worked on data structures, object oriented programming and standard libraries.
Fortran Programming	Worked on commercial desktop application development using Intel Fortran Compiler with Visual Studio.
Object Oriented Programming	Object Oriented Analysis and Design, SOLID Principles.
Linux Environment	Debugging C++ programs with CYGWIN, g++, gdb and make.
Source Control and Bug Tracking	CVS, Git, Microsoft TFS and Microsoft Azure DevOps.
Agile Software Development	Knowledge of Scrum and Agile practices for software development.
Python Programming	Used Python and 3rd party libraries for rapid development.
Unity 3D Game Development	Developed several 3D and 2D indie games using Unity 3D and C# scripting.
Front End Web Development	Knowledge of basic frontend technologies including HTML, CSS, JavaScript and Bootstrap.

Education

National University of Sciences and Technology (NUST)

Islamabad, Pakistan

Bachelors in Mechatronics Engineering

Sept. 2015 - Jul. 2019

- Algorithm and Computing.
- Object Oriented Programming (C++).
- Data Structures.
- Microcontroller Based Systems.
- Mechatronics System Design.
- Linear Algebra and Vector Calculus.

Technical Projects

Visualization of distribution of pharmaceutical industries using ArcGIS Pro

2020-2021

- SIC Codes for pharmaceutical industries were extracted from the ONS UK website
- Python script was used for extraction, pre-processing and classification of industrial data.
- Processed CSV files were imported in ArcGIS Pro application and spatial distribution was visualized.
- The aim was to help pharmaceutical industries and similar industries to realize the best transportation routes, distribution channels and supply chains

ASME BPVC Section III - Rules for Construction of Nuclear Facility (in AutoPIPE)

2020-2020

- Implemented the 2019 edition update for ASME Nuclear NB, NC and ND piping codes for construction of nuclear facility.
- Updated the stress and allowable calculation subroutines in Fortran.
- Updated the dialogs and the UI for the new edition in Fortran and C++.
- Updated to the program documentation using RoboHelp 2017.

Development of a Low-Cost Tilt Sensing System for Building Health Monitoring

Bachelors Final Year Project

2018-2019

- Developed a tilt sensing system using ARM Cortex M3 (primary controller), NodeMCU (open-source IoT platform), and ADXL-PMDZ-355 (accelerometer).
- Designed a web interface and smartphone app.

Air Pollution and Noise Monitoring System Using Raspberry Pi

2019-2019

- Raspberry Pi 3 B+ was interfaced with gas sensors (MQ-135, MQ-7, MG-811).
- ADC MCP3008 was used for analog to digital conversion of signals.
- Python3 was used to program the system.
- ThingSpeak API was used to display data on the web interface.

NERC Indigenous Autonomous Arena-Solving Robot

National Engineering Robotics Competition

2017-2018

- Designed and programmed an autonomous robot which could localize itself in a given arena.
- The robot was able to sense obstacles, place objects, follow walls, and follow lines.
- Color sensor (TCS3200), SONAR sensor (HC-SR04) and IR sensors were interfaced with Arduino Mega 2560.
- DC stepper motors were used with Arduino Mega to design the ball potting mechanism.

Academic Publications and Research

IoT-based Accident Detection and Emergency Alert System for Motorbikes *IEEE*

First Author *2021*

- This paper proposes the design of an accident detection system for motorcycles that notifies the emergency contact of the injured motorcycle driver about their precise location so that necessary medical help can be provided timely.

Honors & Awards

2021	**Presenter and First Author,** International Conference on Artificial Intelligence and Mechatronics Systems (AIMS)	*Bandung, ID*
2018	**Finalist and 1st Runner Up - Indigenous Category,** National Engineering Robotics Competition (NERC)	*Islamabad, PK*
2015	**Stoori Da KPK Merit Scholarship,** Board Of Intermediate & Secondary Education (BISE), Bannu	*Bannu, PK*
2014	**AFAQ Talent Award,** AFAQ (Association for Academic Quality)	*Peshawar, PK*