Saad **Ur Rehman**

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

Munich, Germany

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Summary

I am a dedicated software developer with extensive experience working for renowned companies. My primary expertise lies in C++ programming, and I have successfully developed software for both Linux and Windows platforms. With a strong background in C++, I am skilled at creating efficient, high-performance solutions. I am passionate about continuous learning and staying updated with the latest industry trends.

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 maintain, improve and upgrade driving simulators.
- Develop and design new features for a large-scale software in C++ 17 on linux platform.
- Design and write unit tests to ensure code reliability and performance.
- Contribute to architectural design decisions and code reviews to ensure maintainable and scalable codebase.
- Take part in software development life cycle, agile methodologies, and version control systems.

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.

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.
- Troubleshooted, debugged and upgraded existing AutoPIPE features.

Bentley Systems

Islamabad, Pakistan

Research & Development Trainee

July. 2019 - Nov. 2019

- Updated validation and verification calculations for AutoPIPE using PTC Mathcad.
- Carried out Blackbox Testing of AutoPIPE Nuclear and AutoPIPE Vessel.
- Developed POC calculation 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.

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.

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

Virtual and Autonomous Driving Experience Development *BMW Group*

Jan 2023 - Present

- Develop Linux-based software using C++ for virtual and Autonomous Driving Experience.
- Implement new features and perform debugging to improve overall driver experience.
- Debug, updgrade and maintain features in MATLAB and Simulink models.

ARIES Petroleum Economics Software - Backend Engine Development *LMKR*

Sept 2021 - Nov 2022

- Enhanced the software's existing features and added new features for new calculations.
- Implemented a range of improvements and new features using Fortran and C++.
- Worked closely with economists and other domain experts to ensure that the software was meeting their needs.

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

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.