

# Muhammad Ahmed

Senior Software Engineer

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## Profile Summary

Senior Software Engineer with 15+ years of experience in software development across product-based and multinational software companies including ITRS Group PLC, Intel/McAfee and Ultimus. Strong background in object-oriented software design and development using Java, C#, C/C++ and Objective-C, with additional familiarity with Python. Experienced across the full software development lifecycle, including requirements analysis, design, development, testing, maintenance and release.

Strong understanding of SOLID principles, design patterns, Agile methodologies, CI/CD and software development practices. Experience developing software for Windows, Linux, Unix and Android environments, with additional experience in networking, real-time/low-latency systems, distributed applications, REST APIs, microservices and containerization technologies.

Completed an Erasmus Mundus Joint Master's degree in Networks and E-Business Centred Computing across the University of Reading (UK), Universidad Carlos III de Madrid (Spain) and Aristotle University of Thessaloniki (Greece), receiving an Erasmus Mundus scholarship and distinction for academic performance.

## Education

### MSc, Networks and E-Business Centred Computing

*Erasmus Mundus Joint Degree – European Commission. University of Reading, United Kingdom; Universidad Carlos III de Madrid, Spain; Aristotle University of Thessaloniki, Greece* 2006 – 2008  
80.60% / Distinction

### BS in Computer Science (Hons)

*International Islamic University, Islamabad* 2000 – 2003  
GPA: 3.39 / 4.0

## Awards & Distinctions

- **Erasmus Mundus Scholarship Award – European Commission, Brussels**  
Scholarship for higher education and research as part of the Erasmus Mundus Joint Master's programme.
- **Erasmus Mundus & University Distinction Award**  
Recognition for outstanding academic performance, including achieving above 80% marks in the Master's programme.
- **University Scholarship**  
Scholarship awarded for the Bachelor's degree in Computer Science.

## Technology Stack

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|-------------------------|------------------------------------------------------------------------------------------------------------------|
| Languages               | Java, C#, C/C++, Objective-C, Python (familiar); object-oriented software development                            |
| Software Engineering    | SOLID, design patterns, UML, object-oriented design, Agile/Scrum, SDLC, CI/CD, unit testing                      |
| Backend & APIs          | Spring Boot, JPA/Hibernate, REST APIs, microservices, JSON, XML                                                  |
| Networking              | TCP/IP, UDP, network programming, custom protocols, distributed communication, real-time and low-latency systems |
| DevOps & Infrastructure | Docker, Kubernetes, virtualization, Jenkins, Git, CI/CD                                                          |
| Testing                 | JUnit, Mockito, automated testing, performance testing                                                           |
| Databases               | PostgreSQL, MySQL, Microsoft SQL Server                                                                          |
| Platforms & IDEs        | Windows, Linux, Unix, Android; Visual Studio, Android Studio, IntelliJ IDEA, Eclipse, NetBeans, Xcode            |
| Other                   | COM, MFC, multi-threading                                                                                        |

## Professional Experience

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### Software Development Engineer

Jan 2016 – Present

*Self Employed*, Pakistan

- Worked on a range of application projects as a freelance software engineer, covering software development, deployment, testing, maintenance and client support.
- Currently developing **SyncTunes**, a data synchronization application involving extraction, transfer and presentation of media data across Android, Windows and macOS devices.
- Designed and implemented client-server components involving network programming and communication using custom protocols and JSON-based data transfer over TCP/IP, 4G/mobile networks and Wi-Fi.
- Focused on performance and low-latency communication as core aspects of the application architecture.
- Developed object-oriented software using C#, Java, C++ and Objective-C.
- Worked with Visual Studio, Android Studio, Xcode and Eclipse.

### Founder & Software Engineer

Jan 2014 – Dec 2015

*Bit Studio Limited*, United Kingdom

- Developed, deployed, tested and maintained Android and desktop applications.
- Provided client support, troubleshooting and bug fixing.
- Developed software using Java, C++, C# and Objective-C.
- Used Visual Studio, Xcode and Android Studio with Git for version control.

### Software Development Engineer in Test

Mar 2013 – Dec 2013

*Intel / McAfee*, Aylesbury, Buckinghamshire, UK

- Participated in the full software development lifecycle including design, development, testing, release and post-release support of security and performance evaluation modules.
- Developed plugins for the **McAfee Performance Assessment Test Suite (MPATS)** using object-oriented C# to evaluate performance characteristics of McAfee products.
- Developed automated test systems in C# to analyse and measure the performance impact of antivirus products on Windows platforms.
- Worked on performance aspects including network latency and TCP/IP communication impact.

### Software Development Engineer

Apr 2008 – Dec 2011

*ITRS Group PLC*, London, UK

- Developed components of **Active Console**, the Java desktop client for the real-time, high-performance and low-latency Geneos monitoring system.
- Worked with real-time events received from C++ backend gateway components over TCP/IP, updating internal models and presenting critical information through the UI.
- Gathered requirements and designed and implemented new components using object-oriented Java and C++, applying appropriate design patterns.
- Maintained and enhanced frontend Java components and backend C++ components, including bug fixing and unit testing.
- Worked in an Agile environment with daily Scrum meetings and CI/CD practices.
- Gained experience with portable C/C++ server components running across Windows, Linux, Unix and SPARC platforms.

### Software Development Engineer

Jul 2004 – Jun 2006

*Ultimus Inc.*, Islamabad, Pakistan

- Developed and maintained components of a business process management product suite primarily implemented in object-oriented C/C++ using Microsoft Visual C++.
- Performed bug fixing and maintenance of existing C++ components involving ActiveX, MFC, COM, LDAP and Active Directory.
- Designed and rewrote an existing ActiveX C++ client as a Windows application using C# and .NET Remoting.
- Gained end-to-end software development lifecycle experience spanning requirements, design, development, testing and maintenance.

## Academic & Research Experience

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### Lecturer

*National University of Computer and Emerging Sciences (NUCES)*, Islamabad, Pakistan      Oct 2010 – Dec 2010

- Taught Object-Oriented Analysis and Design to undergraduate Computer Science students.

### Master's Thesis. 3D Molecular Docking in a Virtual Reality Environment

*The University of Reading*, Reading, United Kingdom

Oct 2007

– Mar 2008 **Technologies:** C/C++, Linux, CAVE Framework, OpenSG, Molecular Docking, Genetic Algorithms, Monte Carlo Algorithms, GNU C++, KDevelop

- Developed a C/C++ application for molecular docking and interactive visualization in an immersive virtual reality environment, aimed at supporting computational drug design.
- Designed and implemented search-based molecular docking functionality using genetic and Monte Carlo algorithms and integrated the system with an SGI Prism virtual reality environment running Linux.
- Implemented immersive visualization and interaction using OpenSG and tracked head and wand input, enabling navigation and manipulation of molecular structures.
- Integrated computational docking workflows with molecular visualization and evaluated the system by solving different molecular docking problems.
- Conducted research and analysis of molecular docking from a computer science perspective, with emphasis on interactive visualization and immersive interaction.

### IT8 Color Management Tools - Bachelor's Thesis Project

*Elixir Technologies*, Islamabad, Pakistan

Jul 2003 – Dec 2003

- Conducted research into color science and color reproduction algorithms.
- Designed and developed object-oriented C++ applications for inspecting devices and conducting tests to collect scanner, printer and monitor characteristics.
- Worked with Microsoft ICM 2.0 APIs for device color profile generation, together with Visual C++, MFC, COM and Rational Rose.