

CURRICULUM VITEA

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EDUCATION

- **M. Phil Computer Science (80%)** From **Quaid-i-Azam University Islamabad in 2008.**
My research area is “Application of Appropriate Machine Learning Techniques for Automatic Modularization of Software Systems”.
- **M. Sc. Computer Science (72.3 %)**
Passed M. Sc. in Computer Science from **Quaid-i-Azam University Islamabad in 1997.**
- **B. Sc. Math A&B, Physics (73 %)**
B. Sc. with Math A, Math B and Physics from Govt. Gordon College Rawalpindi in **1995.**
- **Higher Secondary School Certificate (70 %)**
F. Sc. with Pre-Engg. subjects from Govt. Gordon College Rawalpindi in **1992.**
- **Secondary School Certificate (78 %)**
Matriculation with Science subjects from F.G. Boys Sec School Humak, Islamabad in **1990.**

EXPERIENCE

	Organization	Post	Period
1	Institute of Information Technology, Quaid-i-Azam University Islamabad.	Assistant Professor (Regular)	Sep. 2010 – in Progress
2	Elixir Technologies Pakistan. Islamabad.	Development Manager	Feb. 2007 – Oct. 2010
3	Institute of Information Technology, Quaid-i-Azam University Islamabad.	Assistant Professor (Ad-hoc)	Feb. 2004 – Feb 2006
4	Elixir Technologies Pakistan. Islamabad.	Senior Software Engineer	Jun. 2000 – Mar. 2004
5	WorldWerx Pvt. Ltd. Technologies Lahore	Senior Software Engineer	Nov. 1999 – Jun. 2000
5	Nextbridge Pvt. Ltd. Lahore.	Software Engineer & Consultant	Feb. 1998 – Feb. 2000

Professional Experience Summary

- **Teaching Experience:**

Currently working as Assistant Professor of Software Engineering in Institute of Information Technology, Quaid-i-Azam University Islamabad from 1st Sep. 2010 as full time permanent faculty member. My teaching interests include “Software Engineering” and “Program design methodologies”. Major areas in software engineering are system analysis and design, software architecture, software patterns, component based engineering and software process management. Major areas in program design methodologies are structured, object oriented and parallel program design.

Already worked as Assistant Professor (Ad-hoc appointment) in Institute of Information Technology, Quaid-i-Azam University Islamabad from 2004 to 2006.

- **Research Work:**

Final Research work for M. Phil:

“Automatic Software modularization using machine learning techniques”

Research involves thorough study of topic along with possible tools development for evaluation of proposed new ideas. I examined software clustering using machine learning techniques based on genetic algorithms. Final thesis is submitted to the university which is accepted. **Currently, I am working on the enhancement of this research to publish it in international journals.**

Final Project of M.Sc. – Artificial Neural Network Workbench (April 1997 – Nov. 1997)

As a student, had done research work for seven months, which is requirement along with course work. Center of Nuclear Studies, Nilore Islamabad, initiated this project. The objective of this software system “ANN Workbench” was to develop windows based artificial neural network software package for researchers of different fields to train networks of any configuration with their training patterns. The proposed software system was primarily for solving optimization problems, however user can design inputs/outputs of problems related to other fields as well e.g. classification etc. I used Visual C++ 5.0 with MFC for the development of this software.

- **Software Engineering Experience:** Working as software engineer involved in design and implementation of software projects. Major area was component based application development in Microsoft Technologies, COM, DCOM and COM+ and UML methodology. Implementation work involved development in Visual C++ with STL, MFC/ATL and C#.Net, creating COM based components. Microsoft Project, Rational Rose and Visual Source Safe were used as management CASE tools. Have through knowledge of Architectural & Design Patterns and Code Refactoring techniques and their implementation. Have design and development of concurrent programming for multi-core systems.

Technical Skills in Brief

Languages	Visual C++ using MFC, ATL, Qt, STL, C# .NET, Visual Basic 6.0, Win 32 API Programming, C++ on Linux with STL, Pascal.
Databases	Introductory knowledge of Oracle for windows, SQL Server.
Technologies	UML, COM / DCOM / COM+, .Net Framework
Applications	MS Project, Rational Rose, MS Visual Studio, Visual Source Safe Development Environment.
Operating Systems	MS Windows, MS DOS

Professional Assignments:

Institute of Information Technology, Quaid-i-Azam University Islamabad.

Assistant Professor – From Sep 2010 – in Progress:

I joined as “Assistant Professor of Software Engineering” at Institute of Information Technology, Quaid-i-Azam University Islamabad. My research areas are Software architectures, Component based software engineering, machine learning techniques and Program design methodologies including structured, Object Oriented and Concurrent based. Currently I am doing research on Software Clustering using Machine learning techniques which was also my research topic in M. Phil. Thesis.

Assistant Professor – From Feb 2004 – Feb 2006:

Major assignments are teaching M. Sc. courses and coordination and supervision of research projects. Software Engineering, Program Design Techniques and Data structures & Algorithms Design are major areas of interest.

Elixir Technologies Pakistan. Islamabad (www.Elixir.com)

Development Manager

1. Tango-Compositions (Feb 2007 – Sep 2010)

Major responsibilities were design and development of Tango-Composition engine using Component Based Software Engineering techniques along with C++ as implementation language for platform independent suite of Tango-Composition components. During the design and development of Tango-Composition, I also lead the work of concurrent and generic aspects of Tango-Composition and successfully implemented them using C++ language along with latest concurrent programming based software libraries e.g. TBB™.

Senior Software Engineer – From June 2000 – March 2004

2. VIPER (August 2003 – March 2004)

Team Size: 6 Position: Team member.

Responsibilities: Writing Software Functional Requirement Specifications.

Project Description: The main features of Viper are

Document Designer Viper provides a user-friendly, standard Microsoft graphical user interface (GUI) to create designs using drawing objects, data bound objects and photographic images, to enhance the business communications.

Environment: Visual C++ 6.0, MFC, ATL, STL, UML, QT, Rational Rose, Visual Studio 6.0, Visual Source Safe 6.0, K-Develop for Linux, MS Word, Power Point, Operating Systems Windows and Linux/Unix.

3. Vitesse (October 2001 – August 2003)

Team Size: Designer Team: 6, Parser Team: 3, Converter Team: 3, Total Members: 12

Position: Team Lead for **Parser** and **Converter** and team member for Document Designer.

Responsibilities: Teams management, Design for Parser and Converter, Development of frameworks for parser, converter and designer, Scheduling, Guidelines for code management and error handling. Providing technical support for VIPP languages and their parsing and conversion process.

Project Description: (Graphical Application Designer, VIPP Parsers, VIPP Converter)
Vitesse is a complete design suite for creating, parsing, editing, converting and printing very complex, customized documents on a variety of Xerox PostScript print devices, in monochrome, highlight color and full color at production speeds. This application has three components: **First**, Vitesse Application Designer provides graphical user interface for designing documents. **Second**, VIPP and Postscript parsers read source files written in postscript and VIPP. **Third**, VIPP converter is responsible to convert VIPP application and resources designed in Application Designer to VIPP print jobs ready to sent print media of a variety of Xerox printers.

Environment: Visual C++ 6.0, MFC, STL, UML, Rational Rose, Visual Source Safe 6.0, Operating System Windows (2000, NT).

4. Elixir Color Chooser Component (August 2001 – November 2001)

Team Size: 4 members

Position: Development Manager

Responsibilities: Team management, Design and Development, Scheduling, Guidelines for code management and error handling.

Project Description: The project consists of development of a color chooser and color modal converter COM component in the form of ATL dll with MFC support. This component can be embedded in applications for color conversion and selection of color in a particular modal. Four modals are supported, RGB, HSB, CIELAB and CMYK.

Environment: Visual C++ 6.0, MFC, STL, UML, Rational Rose, Visual Source Safe 6.0, Operating System Windows (2000, NT), Elixir Libraries.

5. VIPP Native Mode Converter (June 2001 – September 2001)

Team Size: 6 members

Position: Team Lead for Design and Development.

Responsibilities: Team management, Design and Development, Scheduling, Guidelines for code management and error handling.

Project Description: It was required to have an add-in to Elixir TSW (Transformation Suite for Windows) that would convert the fully composed data stream and all the resources into Xerox VIPP (Variable Intelligent Postscript Print ware) native mode stream. VIPP stream converter has been developed for this purpose.

Environment: Visual C++ 6.0, MFC, ATL, STL, UML, Rational Rose, Visual Source Safe 6.0, MS Word, Power Point, Operating System Windows (2000, NT).
Elixir Libraries.

6. FinStar - Workflow System (June 2000 – June 2001)

Team Size: Workflow System Team 15 members and Workflow Builder Team 4 members

Position: Team Lead for Design and Development of Workflow Builder.

Responsibilities: Team management, Design of Workflow Builder, Development of Frameworks, Scheduling, process management for Workflow system. Guidelines for code management and error handling.

Project Description: Workflow System is an integrated suite of easily configurable workflow enabling tools. These tools can be used to create production workflow solution, which intelligently route and track information and tasks through out the organization based on business rules and strategies. This workflow system is designed as components based N-Tier application.

Environment: Visual Basic 6.0, Visual C++ 6.0, MFC, STL, UML, Rational Rose, Visual Source Safe 6.0, MS Word, Power Point, Operating System Windows (2000, NT).

Senior Software Engineer – (November 1999 – June 2000)

1. SuiteWrex / Sales Commissions

Team Size: Total Members: 10

Position: Team member

Responsibilities: Design and Development of DCOM server, Business layer and Reports.

Project Description: Worked as a team member on **SuiteWrex** application, which provides solution for telecommunication companies in multi user environment. Major assignment includes customization of **Sales Commissions** (one of the Module of SuiteWrex) for a telecom a company. The scope of work for this customization includes three major areas:

1. Import billing data for commission calculation.
2. Customization of Sales Commission Module to cater business requirements.
3. Custom pre-formatted reports.

A DCOM Component, “Data Gateway”, was designed and developed for data import from data file of Oracle Database. This gate way is implemented as DCOM server using Visual C++ 6.0, MFC and ATL. Implemented business logic and data persistence using framework of SuiteWrex, which is a multi-tier DNA framework.

Environment: Windows DNA Frame Work, Visual C++ 6.0, MFC, ATL, STL, Windows NT, UML, Rational Rose, Visual Source Safe 6.0, MS Word, Install Shield 5.5.

Nextbridge Pvt. Ltd. Lahore (<http://www.nextbridge.com>)

**Senior Software Engineer -- (February 1998 – November 1999) and
Consultant – (November 1999 – February 2001)**

1. Computer Optimized Process Solutions (COPS) (April 1998 – September 1999)

Team Size: Total Members: 5

Position: Team Lead

Responsibilities: Team management, Design and Development, Coordination with consultants, Testing, and Shipment.

Project Description: Involved in the design and development of COMPUTER OPTIMIZED PROCESS SOLUTIONS (COPS). COPS includes a complete package of tools required to achieve robust process improvement results in one easy to use integrated Windows® based software system. COPS uses a proven five-step process for identifying and controlling the important variables.

- **COPS-SVA:** The **COPS Sources of Variation Analysis (COPS-SVA)** helps to isolate the main sources causing variability in a process. SVA calculates the partitioned standard deviations for each component of variation included in a study. This information allows the user to understand which parts of the process are contributing most to the overall variability in the process. Using this information, the problem-solving effort can be directed into regions that will yield the greatest benefits.
- **COPS-CCA/ANOM:** **COPS Control Chart Analysis (CCA/ANOM)** software provides users with a statistically sound, yet easy to use and interpret package. CCA/ANOM uses the industry-proven Western Electric Rules for detecting shifts on control charts. CCA/ANOM provides transformations for normalizing data and

generating asymmetric control limits for skewed distributions. **CCA/ANOM** develops probability plots and other tests for detecting unusual patterns in data, such as runs and trends. **CCA/ANOM** determines the Process Performance Index and Process Capability Index for both normal and non-normal distributions. X-MR Charts are available to analyze individuals' data. C-charts and p-charts are available for count data. X-Bar and R Charts and ANOM allow time dependent and non-time dependent grouped data to be analyzed for indications of special causes of variation, respectively.

- **COPS-MCA: COPS Multiple Correlation Analysis (COPS-MCA)** enables the process expert to develop the knowledge needed to improve any process. With the aid of **MCA**, process owners can develop process models that accurately quantify the effects of many variables on process properties under investigation. **MCA** provides an easy to use, pull-down menu-driven method for creating interactions. **MCA** provides the user with an array of diagnostic tools for outlier detection. **MCA** allows the user to test various scenarios in order to validate the physical interpretation of the relationships established.
- **COPS-EDO: COPS Experimental Design Optimizer (COPS-EDO)** makes the generation of informative and efficient designs an easy task. **EDO** looks for nonlinear and interaction effects that are most likely to be important while requiring only a minimal number of experiments. With **EDO**, variables with large number of levels can be studied, instead of placing all variables at just two or three levels. **EDO** lets the process expert tailor the design space to experiments that can be safely run. The program optimally augments the existing database and selects the appropriate number of additional experiments for the design. After **EDO** orders the experiments based on the user's priorities, the first few experiments in the EDO design contain enough information from which to determine the effects that should be most important.
- **COPS-MPO: COPS Multiple Property Optimization (COPS-MPO)** software enables the process expert to determine how a process should be run in order to achieve the best balance of conflicting properties. Thousands of possible process combinations can quickly be generated via **MPO**. **MPO** examines these combinations to find the best process settings to balance conflicting properties of the customer. The constraint option in **MPO** ensures that only valid process settings are considered. Constraint equations are entered into **MPO** to restrict combinations that are physically impossible or are undesirable from a safety point of view.

Environment: UML, Visual C++ 5.0, MFC, Windows 95, Rational Rose, MS Word, Install Shield 5.5, RoboHelp and Formula One Active X Control 5.0.

References

- **Dr. Muhammad Afzal Bhatti**
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