

Summary

- Having vast experience of research and working in the field of GIS in different capacities in large organizations
- Experience of working with the organization like Planning and Development Department, United Nations Development Programme, Asian Development Bank, Focus Humanitarian, ILF Pvt Ltd, NESPAK Pvt. Ltd, and Netsol Pvt. Ltd.
- Research area is fuzzy GIS and intelligent system development for water and land suitability analysis and published 12 Journal papers and 5 conference paper in this field.
- Experience of project management of different GIS projects in the field of Disaster Risk Management, Water Resource Management, Urban Planning, Agriculture, and Route Planning for Railway line and Gas Pipeline.
- Hands on experience of working in open source solution like QGIS, Udig, HECRAS, R as well as the commercial solution like ArcGIS, ERDAS and ERMapper, Matlab.
- Hands on experience of GIS development in Python, PHP, Java, Javascript, and C#.
- Hands on experience of working in spatial database, i.e., Postgres/PostGIS, Oracle/Oracle Spatial, and MySQL, web spatial server, i.e., GeoServer, Mapguide, Geonode and ArcServer, and spatial libraries, i.e., Openlayers, Leaflet, Cesium, ArcObject, Geotool, JTS, and Google map API.
- Experience of working in mobile technology like Android, Symbian, and J2ME.
- Experience of teaching in Fuzzy GIS, Geospatial databases, Geostatistics, Web GIS, Geo-spatial system design and 3d GIS.

Specialties: Water Informatics, Land Suitability Modeling, Fuzzy GIS, Intelligent System, GIS Engineering/Development, Image Processing, Geostatistics, Geoprocessing

Education

Ph.D. in Computer Studies

PUCIT Punjab University

2010 – 2015

Focused on the Fuzzy GIS, Intelligent System Development and Land Suitability Analysis. Research thesis was **Spatial Fuzzy Intelligence System for Land Suitability Model**.

M.Sc. in Geographical Information System

PUCIT Punjab University

2003 – 2005

Focused on the GIS, Remote Sensing, GIS Analysis and Decision Support System. Research thesis was **De-noising of SRTM Data using Wavelet**.

M.S. in Computer Science

UCP

2001 – 2003

Focused on the Computer Science, Programming, Data Structure, and Databases. Research topic was **Shortest Path Analysis**.

B.Sc. in Civil Engineering

UET Lahore

1995 – 2000

Focused on the Structure, Hydrology, Fluid Mechanics, Strength of Material, and Soil Mechanics. Research topic was **Computer Application in Construction Management and Planning**.

Certificate

Deltares

2018

Indus- Flood Early warning system, river basin modeling, and its integration on web platform, held at Deltares, Delft (Netherlands)

Certificate

International Research Association on Large Landslides

2017

Field data collection, monitoring, and modeling of large landslides held at State Key Laboratory of Geohazard Prevention and Geoenvironment Protection (SKLGP), Chengdu China

Certificate

Asian Disaster Preparedness Center (ADPC)

2016

Risk Information and Communication for Effective Risk Financing and Development of DRR Policies
arranged by World Bank in Bangkok, Thailand

List of Publication

Journal Publication

1. Marginality and Social Exclusion in Punjab, Pakistan: A Threat to Urban Sustainability, *Sustainable Cities and Society, Elsevier wordmark*(2017)
2. Using geographical information systems to assess groundwater contamination from arsenic and related diseases based on survey data in Lahore, Pakistan, *Arabian Journal of Geosciences, Springer, October*(2017)
3. Fuzzy Climate Decision Support Systems for Tomatoes in High Tunnels, *International Journal of Fuzzy Systems, Springer* (2015).
4. Mapping Soil Electric Conductivity using Bayesian Kriging – A case study from Qasur, Pakistan, *Journal of Geological Study, Springer* (2015)
5. Bipolar Fuzzy Digraph in Decision Support System. *Journal of Multi-Valued Logic & Soft Computing, Journal of Multi-Valued Logic & Soft Computing, Vol. 0, pp. 1-21,(2015).*
6. GIS Enabled Condition Based Asset Management of Gas Distribution Network A Case Study of Shahdara, Lahore Pakistan, *Journal of Geographic Information System, 7, 358-368. doi 10.4236/jgis.2015.74028. (2015).*
7. Protecting agricultural land in developing countries — A case study from Lahore, Pakistan, *International Journal of Advance Remote Sensing and GIS. ISSN2320-0243, (2015).*
8. Type-II Fuzzy Decision Support System for Fertilizer, *The Scientific World Journal 2014, Hindawi Publisher* (2014).
9. Fuzzy decision support system for fertilizer." *Neural Computing and Applications, Springer Publisher, Neural Computing and Applications, Springer Publisher, pp 1-11, 2014.*
10. Novel Applications of Intuitionistic Fuzzy Digraphs in Decision Support Systems, *The Scientific World Journal 2014, Hindawi Publisher, (2014).*
11. Digitized Profile of land for agriculture use in Punjab Pakistan, *International Journal of Scientific & Engineering Research, Volume 4th, Issue 11th, November 2013..*
12. Spatial variability mapping of soil-ec in agricultural field of Punjab province(Pakistan) using geographic information system (GIS) technique, *International Journal of Scientific & Engineering Research, Volume 4th, Issue 11th, November-2013.*

Conference Proceeding

1. Data Clearinghouse for Water Resource Management, ADB Asian Water Forum 2018 , Oct 2018
 2. Multi-criteria Analysis for Spatial Modelling of Forest Protection Zones, GeoMEast , July 2017
 3. Enabling Marketing Intelligence in Spatial Domain using Spatial Statistics, SRSA Conference March 31st-April 2nd, 2016.
 4. GIS based probabilistic hazard risk assessment of road accidents, GEOMATE2015, Nov 16th- 18th, 2015.
 5. GIS based probabilistic hazard vulnerability and risk assessment of flood in swat and Kabul river, SRSA Conference March 26th- 28th, 2015,
 6. Decision Support System for Flood Disaster Management, NARSC Conference, Nov 12th- 15th, 2014.
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Projects

Flood Emergency Reconstruction and Resilience Project

This project aims to enhance physical and fiscal resilience through structural and non-structural mitigation measures including climate change adaptations for flood resilient infrastructure and institutional capacity strengthening under portfolios of PDMA, C&W, Irrigation and P&D Departments.

Working as a project director in P & D component. The main objective includes:

- Development of Data Clearinghouse for water resource management, spatial data sharing, and management.

- Development of [Project Performance Monitoring System](#) for Monitoring & Evaluation of all the reconstruction of under this project.
- Development of Disaster Impact Assessment (DIA) for mainstream DRR into development process.

Tool/Technologies *Postgres / PostGIS, Python with Django Framework, Openlayer, Cesium, jqxWidgets, Apache Hadoop, Ubuntu server*

Assets Management for Local Government

Worked as a consultant for the development of GIS-enabled Asset Management for local government. The system shows a statistical view of the condition and revenue of the asset generated annually. The details show on the map viewer with its location. An android application is developed to gather its information with their location.

Tool/Technologies *Postgres / PostGIS, Python with Django framework, geoserver, OpenLayers, Extjs, High chart and High map, CentOS linux server*

Land Record Management System for Railways

Working as task lead for the development of GIS Enabled MIS system for land record management of Pakistan Railways. The main task is to identify land, harmonize it with BOR land record and on top of it developed a leasing module.

Tool/Technologies *ArcServer, Postgres / PostGIS, bootstrap and Java Spring*

Land Record Management Information System for PLRA

Working as GIS Consultant for Punjab Land Record Authority. The task include planning of Cadastre Module and develop a PC-1 for project execution.

GIS Architecture Design for Disaster Risk Reduction

Worked as a consultant for Asian Development Bank. Designing a GIS architecture for Provisional disaster management authorities of Punjab Province and AJK (Kashmir).

Flood Hazard Maps for NDMA

Developed a Flood Hazard map for four districts of Punjab, i.e., Khushab, Jhang, Multan, and Raheem Yar Khan, under the project of MHVRA for NDMA. Hazard maps are developed using HECGeoRAS for spatial data preparation and HECRAS for flood modeling for 10, 50, and 100 years return period.

Probabilistic Flood and Seismic Hazard Modeling

Project funded by the World Bank, working as its project coordinator. Coordinating spatial data sharing and its availability on web platform for disaster management and planning by National Working Group (NWG). The output of the project includes flood and seismic hazard mapping, exposure mapping, vulnerability mapping, and risk mapping. All these maps along with NWG data is shared on a web platform.

Tool/Technologies *GeoNode, Python with Django, Postgres / PostGIS, Geoserver, OpenLayers, Extjs and Ubuntu linux server*

Snow Avalanche Simulation Modeling

Developed an enterprise level Avalanche simulation application for disaster management. Application is developed for FOCUS Humanitarian which work for Aga Khan Foundation. This application provides detail information (spatial and attribute) about the village and infrastructure under risk.

Tool/Technologies *Postgres / Postgis, Geoserver, OpenLayers, Extjs and Java*

Flood Modeling for Pre-Disasters Management

Developed an enterprise level flood modeling application for pre disaster management. Application is developed for PDMA. This application calculate the flood extent based on discharge and provide detail information (spatial and attribute) about the village submerged. The system has also the capability of broadcasting the disaster alert to focal persons and calculate the financial loss.

Tool/Technologies *Postgres / PostGIS, Geoserver, OpenLayers, Extjs and Java*

Campus Guide

Android application develop for King Saudi University. The purpose is to guide user about the campus, lectures room and resources within the campus. The informations are provided on maps. User can find path and navigate with in the campus.

Tool/Technologies *Android, Mysql, Geoserver, OpenLayers, Extjs and Tomcat*

Spatial Education Information System (SEMIS)

Developed an enterprise spatial education information system for government of Punjab. The project was funded by GTZ. The application provide detail information (spatial and attribute) about the schools at district level. Provide number of spatial and attribute analysis in the system.

Tool/Technologies *PHP, MySQL, Joomla, Geoserver, OpenLayers, JxLib and Tomcat*

Mobile Backup Application

Mobile backup application is developed for storing the content of mobile like contacts, SMS, MMS, calendars, images and videos. User can view its data on the web and can synchronize the data with its application. OMA standards were used for the application.

Tool/Technologies *Symbian, J2ME, PHP, MySQL and Joomla*

Landfolio Software

Developed a GIS module of landfolio software. This software was designed for Stewart International (provides global land solutions). The software has been deployed in Antigua, Belize and Bermuda. The front end of the software is developed in .Net 2005 using ESRI Arc Engine, the back end of the software is in SQL Server 2005. ArcSDE is used to enable spatial capabilities in SQL Server.

Tool/Technologies *SQL Server, VB.Net, ArcServer, ArcEngine*

Route planning for GAS Pipe line from OGC Plant (Kunner) to SSGCL tie point (Hyderabad)

In this capacity I have worked as a consultant with German consultant for planning route of Gas pipe line. This route is from OGC refine plant in Kunner to SSGCL tie point in Hyderabad. The major tasks were image processing, developing DEM and DTM and finally a 3-D movie show the route.

Tool/Technologies *ERMapper 7.1, ArcGIS 9.2, Global Mapper 8.0*

Routes planning for railway line from Havelian to Khunjarab (china border)

In this capacity I worked as a local consultant with Germans consultant, for planning routes for Railway line from Havelian to Khunjarab. This route is along the silk road of Pakistan. The major task was image processing (0.6 m resolution), developing Digital terrain model, contour generation, hydrological modeling, and survey.

Tool/Technologies *ERMapper 7.1, ArcGIS 9.2, Global Mapper 8.0*

Kalabagh Dam Resettlement Study

In this capacity I worked as a team lead on Kalabagh Dam resettlement study. Statistics were calculated of different land cover and land use types like cultivated area, barren area, river area, houses and trees. The statistics were generated using digital image classification on Quick bird imagery (resolution 0.6m). These statistics were used for cost estimation of resettlements.

Tool/Technologies *ERDAS 8.x, Matlab 7, ArcGIS 9.x*

Flood Plane Mapping

In this capacity I have developed flood prediction maps of river Jehlum and Indus (From Taunsa to Guddu Barrage). These maps were developed using satellite imagery of SPOT (Resolution 2.5m) and SRTM (Shuttle Radar Topography mission) (Resolution 3 arc sec) data. Satellite imagery along with Survey of Pakistan's Topographic sheet was used to identify different features like Bund and Spars along the river bank. SRTM data was first de-noised and then used to develop a DTM (Digital Terrain Model). With the help of DTM contours were generated at 0.5m, 1 m and 2.5 m interval.

Tool/Technologies *ArcGIS 9.x, HECRAS and GeoHECRAS*

Watershed modelling of Ghizar

Developed a watershed model of Ghizar. To develop this model I have used SRTM data and low resolution imagery of landsat (15m resolution)

Tool/Technologies *ERMapper, GlobalMapper, ArcGIS*

WCB Tax Mapping

Worked as a team lead in developing a GIS enabled tax mapping solution. The application includes geo-coding Walton Cantonment Board area. The software also integrates GIS system with Tax database developed in Oracle. Application enabled WCB to view reports like Tax, Area and lessee details

Tool/Technologies *ArcObject, ArcGIS Engine 9.x, Visual Basic 6, Crystal Report 8 and ErMapper 7*

Work Experience

PUCIT Punjab University

August 2007 - todate

Worked in Punjab University as an Assistant Professor in GIS Center. Responsibility include research and teaching Water Resource Management, Water Informatics, Geo-statistics, GIS Programming, Geo-Spatial Databases, Web GIS and Geo-spatial System design.

Planning and Development Department June 2016 - Sep 2018

Working as a project director in "Flood Emergency Resilience Reconstruction Project" (FERRP). The main duties include supervision of all the teams under GIS development, Disaster Risk Reduction, M&E, Mainstreaming Disaster Risk Reduction into Development Process. Developing a spatial data clearing house for data sharing and assessing disaster impact. Looking after the financial aspect of the project.

CTO 24/7 Pakistan Pvt. Ltd.

June 2007 - March 2008

I have worked there as a GIS consultant and developed a Land Management system by the name of "Landfolio" which is now owned by Trimble. This has been deployed on three countries Antigua, Belize and Bermuda.

NetSol Technologies

July 2006 - September 2007

Netsol is one of the largest IT Company in Pakistan. It is the only company in Pakistan which is at CMMI level 5. I worked here as a GIS developer. My designation was Senior Software Engineer. My responsibility included designing of Land Record Management Information System and develop its prototype.

NESPAK Pvt. Ltd.

September 2004 - Feb 2006

NESPAK is one of the largest engineering consultant company in Pakistan. I worked here as a GIS Engineer. Responsibility includes the development of flood plain mapping, team lead for resettlement analysis of Kalabagh Dam project and development of enterprise spatial solution for WCB tax mapping.

JGC-DESCON (J-Tech) Pvt Ltd.

December 2003 - August 2004

J-Tech is a joint venture of JGC (Japan) and Descon(Pakistan). Currently it is known as JGC-DESCON. I worked here as CAD Analyst. My designation was Asst. Software Engineer. Responsibility included customizing CAD solutions and initiating and maintaining projects in Databases and CAD.

A.H. Trader

April 2000 - August 2001

FONGAS (Fauji Foundation subsidiary) is an LPG gas storage and distribution plant at Kot Addu near PARCO. My company was involved in the Installation of Tube well, laying of GAS pipeline (from PARCO to FONGAS plant) and lying of water supply line and firefighting line within the plant. I worked here as a site engineer. My responsibilities included

- Manage, handle and communicate with a team of technical staff and subcontractor
- Supervising laying of gas pipelines and Installation of Tube well
- Certifying and complying with standards of FONGAS (Fauji Foundation)
- Maintaining engineering quality standard for materials and work
- Prepared BOQ (Bill of Quantity).

Membership

- Member, Pakistan Engineering Council
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Reference

Name	Dr. Shakir Mahmood
Relationship	Colleague
Organization	University of Engineering and Technology (UET)
Contact Phone	+92-3454-064969
Contact Email	plannershaker@gmail.com

Name	Dr. Muhammad Akram
Relationship	Teacher
Organization	Punjab University
Contact Phone	+923334510258
Contact Email	makrammath@yahoo.com
