

SUMMARY OF QUALIFICATIONS

A researcher and software engineer specializing in the design of innovative solutions by studying user needs and practices through a combination of qualitative and quantitative methods. Currently working towards a Ph.D. in Human Centered Design & Engineering at the University of Washington.

EDUCATION

Doctor of Philosophy (Ph.D.) – GPA: 3.98
University of Washington

- **Department:** Human Centered Design & Engineering

Enrolled September 2014
Seattle, United States

Master of Science (M.S.) – GPA: 3.71
Lahore University of Management Sciences

- **Major:** Computer Science

Graduated June 2012
Lahore, Pakistan

Bachelor of Science (B.Sc.) Honors – GPA: 3.73
Lahore University of Management Sciences

- **Major:** Computer Science

Graduated September 2010
Lahore, Pakistan

- **Minor:** Social Sciences (Literature)

PUBLICATIONS

Arif, A., Shanahan, K., Chou, F.J., Dosouto, Y., Starbird, K., Spiro E. (2016). How Information Snowballs: Exploring the Role of Exposure in Online Rumor Propagation. To appear in ACM 2016 Computer Supported Cooperative Work (CSCW 2016).

Starbird, K., Spiro, E.S., Arif, A., Chou, F.J., Narisimhan, S., Maddock, J., Shanahan, K., Robinson, J. (2015). Expressed Uncertainty and Denials as Signals of Online Rumoring. To appear in Collective Intelligence 2015, San Francisco, CA.

Arif, A., Javed, F., & Arshad, N. (2014). Integrating renewables economic dispatch with demand side management in micro-grids: a genetic algorithm-based approach. Energy Efficiency, 7(2), 271-284.

RESEARCH EXPERIENCE

Research Assistant – emCOMP Lab
University of Washington

January 2015 – Present
Seattle

- Studied the information sharing practices of individuals and crowds on social media platforms during crisis events such as hostage-situations, riots and false-hijackings by applying qualitative methods to large social-datasets.
- Managed and led a qualitative coding process that leveraged constructivist grounded theory and the efforts of 16 researchers in order to produce a high-quality corpus of over 130,000 unique (5 million+ non-unique) labeled tweets that can serve as a resource for future analyses.
- Published research at a tier-one peer-reviewed conference that furthers our understanding of how rumors and their corrections propagate during these high-stress situations.

Research Assistant – Smart Grids Lab
Lahore University of Management Sciences

September 2010 – June 2011
Lahore

- Devised and evaluated a genetic-algorithm based technique for combining economic dispatch and demand side management (DSM) for residential loads in a micro-grid to effectively reduce operating costs in single- and multiple-facility micro-grids for energy suppliers and consumers alike.
- Produced research that delivers up to 15% more cost effectiveness than state-of-the-art independent DSM and economic dispatch models for a neighborhood by acting as first author on a peer-reviewed journal publication which provides an integrated methodology for optimizing DSM and economic dispatch in a localized setting.
- Co-wrote an approved research grant proposal for funding a four year Smart-Grids research project focused on the integration of renewables.

Research Assistant – Software Engineering Lab
Lahore University of Management Sciences**November 2008 – May 2009**
Lahore

- Contributed to a Software Engineering research project focused on automating Function Point calculations and Use Case Estimations by developing a web-based benchmarking tool in Ruby on Rails.
- Helped develop an RFID based smart-plug solution for low-cost remote monitoring and control of household electrical devices by developing the software interfaces for the hardware in C (micro-controller programming).

INDUSTRY EXPERIENCE

Summer Intern (Mail Antispam Team)
Yahoo!**June 2015 – September 2015**
Sunnyvale

- Studied the login characteristics of mail-abusing accounts using Apache Pig, Hadoop and time-series analysis techniques in order to provide better feature engineering for production level machine-learning classifiers with low false positive rates.
- Produced findings showing positive correlations between mail-abusing behaviors and consistent login patterns that led to the confident identification of spam-accounts that were classified as normal users previously.

Lead Software Engineer
Carefully Crafted**October 2013 – September 2014**
Karachi

- Lead developer for a start-up web-consultancy which focuses on establishing online products for early-stage start-ups.
- Served as point of contact, team manager and lead developer for the organization's first major project, Talk Hotels – a social network focused on facilitating collaboration amongst hotel professionals.

Individual Contractor (IC)
United Nations Development Programme (UNDP)**September 2013 – November 2013**
Remote

- Promoted financial inclusion to the underserved in Papua New Guinea by working in close coordination with specialists from the Pacific Financial Inclusion Programme (PFIP) to research and draft a strategy report for the Bank of Papua New Guinea.
- Served as chief editor for the assignment.

Chief Technology Officer (CTO)
Developyst, Department of Information Technology**July 2012 – July 2013**
Islamabad

- Responsible for all technology initiatives at a non-profit ICT services provider with development sector clients, including the Department for International Development of UK (DFID), the Pakistan Poverty Alleviation Fund (PPAF), and Transforming Education in Pakistan (TEP), while managing a eight-member Technology Team.
- Improved coordination and decision making by stakeholders in the country's education development sector by conceptualizing the Pakistan Education Data and Knowledge Observatory – an online portal aimed at centralizing the studies conducted by these stakeholders and visualizing information from key quantitative data-sets.
- Researched requirements and scope of the system by surveying existing non-local solutions such as data.gov and extensively interviewing education development researchers and domain experts, staff members of education-focused NGOs and school administrators.
- Conducted analysis on a large variety of quantitative education data-sets using a variety of tools such as RapidMiner, ArcGIS and SPSS.
- Estimated buy-in and feasibility of the system by developing a prototype for the platform using Ruby on Rails, ArcGIS, D3.js, the Google Visualizations library, Open Street Maps and TileMill.
- Helped raise funding for the platform by providing all technology-specific technical elements of an approved DFID grant proposal.

- Improved software quality assurance practices within the organization by introducing Behavior Driven Development through tools such as Cucumber and Capybara.

Short-term Consultant**December 2011 – July 2012****World Bank, ICT Sector Unit****Lahore**

- Helped conceptualize and develop a re-deployable Android cell-phone based solution which helped automate the collection, verification, and reporting of basic health unit measurements and school condition indicators for the Directorate of Staff Development, the Lady Health Workers Program and the Program Monitoring & Implementation Unit staff.
- Performed user research by conducting interviewing with upper and middle management staff at these programs.
- Developed a Management Information System (MIS) framework and used it to build three online data-visualization dashboards to help decision makers using Ruby on Rails, Google ODK, Fusion Tables, and the Google Maps and Visualizations APIs.
- Built self-ownership of the new system by training three IT department personnel on system maintenance and modification by implementing peer programming techniques, using online collaboration tools such as GitHub, and developing extensive online documentation with wikis and RDocs.
- Built internal web-hosting capacity at these organizations by setting up a full web-hosting stack consisting of an NginX web-server and MySQL database server, and introducing automated deployment tools such as Capistrano to minimize maintenance overhead.

Web Developer**May 2008 – April 2009****TimeSvr****Karachi**

- Developed and coded the timesvr.com website during the inception period for a Singapore registered web-based virtual assistant start-up as a Web Developer coordinating directly with the company CTO.
- Developed back-end functionality modules in Ruby on Rails that enabled users to specify their personal preferences and confidential information, improving the quality of service, and created basic reporting mechanisms to monitor the performance of twenty company agents.

TEACHING EXPERIENCE***Teaching Assistant – Experimental Research Methods*****September 2014 – December 2014****University of Washington****Seattle**

- Graded and evaluated Masters levels students in coursework designed to impart quantitative research methods and their application to user research.
- Delivered tutorials on software packages for statistical analysis such as R and SPSS.

Teaching Associate – Graph Theory**January 2011 – May 2011****Lahore University of Management Sciences****Lahore**

- Co-taught a Junior level undergraduate course offering of Graph Theory at the University of Engineering and Technology, Lahore by designing and delivering 12+ lectures as part of an enquiry into new pedagogical models around Discovery Based Collaborative Learning.

Teaching Assistant – Multiple Literature Courses**August 2009 – May 2010****Lahore University of Management Sciences****Lahore**

- Served as sole teaching assistant for Greek & Shakespearean Tragedy and multiple offerings of Literary Theory and Introduction to Literature.
- Evaluated student theses and assisted students in crafting defensible theses and with general writing.
- Delivered a course lecture on the subject of Deconstruction as a Literary Theory for multiple course offerings. Focus was generally kept on deconstruction as a practical procedure demonstrated by example.

Teaching Associate – Computing Structures**August 2008 – October 2008****Lahore University of Management Sciences****Lahore**

- Designed, conducted and evaluated lab sessions, quizzes and assignments for classes of 30+ freshmen/sophomores

for the Fall Quarter course offering of Computing Structures which focused on imparting basic programming concepts such as recursion, calculation of time complexities and data structures. Basic understanding of Java syntax was also imparted as well as familiarity with console environments such as Linux/Cygwin/bash.

ADDITIONAL LANGUAGES

- **Urdu:** Native Fluency

ADDITIONAL AWARDS

- **Member of the Dean's Honor List (MS):** Graduated with Academic Distinction
- **Member of the Dean's Honor List (Undergraduate):** Graduated with Academic Distinction

TECHNICAL SKILLS

- **Research:** Mixed Methods, Qualitative analysis, Quantitative analysis, Experiment Design, Interviewing, Field Observations, Technical Writing
- **Software:** MS Project, MS Excel, MS Word, MS Power Point, STATA, SPSS, GIMP, GIT, Podio, Mailchimp, Wordpress
- **Foreign Languages:** Urdu – Native Fluency
- **Programming Languages:** Ruby, Python, JavaScript, LISP, Java, C++, C#, C, Assembly
- **Web Development Concepts:** Design Sense, Human-Computer Interface Concepts, Database and Application Integration, Accessibility, Usability, Localization, Standards-Compliance, Cross-Browser Compatibility, Resolution Independence, Grid Layout Systems, APIs, SEOs, MVC Architecture, User Authentication and Authorization, HTML5, CSS, SASS, LESS, JQuery, CoffeeScript, Twitter Bootstrap Kit, Restful Routing, Friendly URLs
- **Data Mining:** Rapid-Miner, Data Cleaning, Data Formatting, Spatial Analysis, Temporal Analysis, Data Visualization Techniques
- **Databases:** MySQL, PostgreSQL, Oracle, MSSQL, Google Fusion Tables, Kettle, Migrating Databases
- **Geographic Information Systems Analysis:** TileMill Map Design Studio, MapBox, ArcGIS, Quantum GIS, PostGIS Extensions, Google Maps API, Open Street Maps, Clustering, Choropleths, Dorling Cartograms, Cartography Concepts
- **Server Administration:** Ubuntu, CentOS, Amazon EC2 Cloud Hosting, LAMP, Setting Up Version Control Repositories
- **Testing:** Test Driven Development, Acceptance Testing, Functional Testing, Unit Testing, Performance Testing, Issue Tracking, Code Reviews, Automated Testing