

Muhammad Raees

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Summary

PhD student with a research focus on Human-Computer Interaction and Data Analytics. Conducting human-centered design research using quantitative and qualitative methods. Strong foundation in statistical analysis, software development, and proficiency in programming (Python, R, SQL). I am well-positioned to drive impact and apply my problem-solving skills in a dynamic and collaborative environment.

Education

Rochester Institute of Technology

Rochester, NY

PhD in Computing & Information Sciences (Concentration: Human-Computer Interaction) – CGPA 4.0/4.0

August 2022 – Present

- **Courses:** Visual Analytics, Big Data, Human-AI, Software Engineering, Research, Quantitative, & Cyberinfrastructure Foundations
- Graduate Research Assistant at Sappi-RIT Digital Innovation Lab.
- Participating in the AWARE-AI NSF Research Traineeship (NRT) Program

Bahria University

Islamabad, Pakistan

MS in Software Engineering – Graduated with Gold Medal – CGPA 4.0/4.0

February 2015 - April 2017

- **Courses:** Data Mining/Warehousing, Usability Engineering, Distributed Systems, Research Methods, Software Quality

Mirpur University of Science and Technology

Mirpur, Pakistan

BS in Software Engineering – Graduated with Distinction – CGPA 3.87/4.0

October 2009 - January 2014

- **Courses in:** Programming, Mathematics, Computer Architecture, Software Design and Development

Skills

Programming

Python*** (Pandas, Plotly, Scikit-learn ...), JavaScript**, SQL**, R**, C++**, PHP**

Technologies

Shell (Bash)**, Git**, Flask**, React**, Big Query**, MySQL**, Selenium**, Tableau**, Dash**, HighCharts**, Power BI*

Research

Prototyping**, Usability Testing**, A/B Testing**, Thematic Analysis**, (Semi-Structured) Interview (Design)**, Experimental Design**, Survey Design**, Participatory Design*, Affinity Diagramming*

Domains

Visualization (Analytics)***, Data Science**, Statistical Modeling**, Machine Learning**, Cloud (AWS, GCP)**

Misc.

Information Extraction and Automation**, Teamwork**, Documentation**, GIS Visualization*

*=Familiar; **=Experienced; ***=Proficient

Work Experience

Rochester Institute of Technology

Rochester, NY

Graduate Research Assistant (Composite role with Sappi Digital Transformation)

2022 – Present

- Conduct HCI and human-centered design research on visual analytics tools to improve user experience in business settings.
- Design & evaluate research studies with users employing various methods (e.g., surveys, interviews, prototypes, quantitative experiments).
- Disseminate technical papers and plans of execution in collaboration with industry partners.
- **Skills:** Prototyping, Data Analysis, Collaboration, Research Writing, Communication.

Mirpur University of Science and Technology

Mirpur, Pakistan

Lecturer

2017 – 2022

- Designed and improved course development in Programming, Human-Computer Interaction, Web Design, & Machine Learning
- Supervised technical and research projects mentoring students; fostered a learning culture through hands-on practical training.
- Managed and improved several organizational processes including space/time management, accreditation, and quantity control.
- **Skills:** Teaching, Supervision, Research, Management, Curriculum Development

Aurora Solutions

Islamabad, Pakistan

Software Engineer

2014 – 2017

- Researched methodologies and evaluations to help measure the attention span deficit using Psychometrics.
- Designed wireframes and design specifications for a diagnostic web application (QbCheck) aimed at evaluating ADHD in school children.
- Worked with QbTech Teams (including engineers and cross-functional partners) to launch the QbCheck platform for ADHD testing.
- **Skills:** JavaScript, Databases, CI/CD, Collaboration, Psychoanalysis, Web Development.

Publications CONFERENCE PROCEEDINGS

Four Challenges for IML Designers: Lessons of an Interactive Customer Segmentation Prototype in a Global Manufacturing Company

M Raees, VJ Javed, K Papangelis

Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems, 2023, Hamburg, Germany

Ancient coin classification based on recent trends of deep learning

S Manzoor, N Ali, M Raees, KA Khan, A Ahmed, MU Ayub

Proceedings of VIPERC2022: International Virtual Conference on Visual Pattern Extraction and Recognition for Cultural Heritage Understanding, 2022

JOURNAL ARTICLES

An intelligent sentiment analysis system based on recent trends in machine learning

KA Khan, SH Dar, S Fazilat, M Raees, A Ahmed, AA Mir

Science International pp. 217–224. 2022

Context-Aware Services Using MANETs for Long-Distance Vehicular Systems: A Cognitive Agent-Based Model

M Raees, KM Abassi, TA Khan, A Afzal, S Fazilat, I Ahmed

Scientific Programming. 2021

Study of software quality improvement through reliability metrics models and root cause analysis program

M Raees

International Journal of Computer Engineering and Information Technology pp. 42–47. 2020

Characterization of flexible wearable antenna based on rubber substrate

SH Dar, J Ahmed, M Raees

Int. J. Adv. Comput. Sci. Appl. IJACSA. 2016

Lateral Pre-crash sensing and avoidance in emotion enabled cognitive agent-based vehicle-2-vehicle communication system.

F Riaz, SI Shah, M Raees, I Shafi

International Journal of Communication Networks and Information Security. 2013

Honors and Awards

2022 **Award**, Graduate Research Scholarship for PhD

RIT

2021 **Award**, Two scholarship Awards for Ph.D.

HEC, Pakistan

2017 **Summa Cum Laude**, Gold-Medallist in Masters

BUI, Pakistan

2016 **Graduate Award**, Masters Tuition Scholarship

BUI, Pakistan

2011 **Undergraduate Award**, Bachelors Tuition Scholarship

MUST, Pakistan

Service

2024 **Technical Mentor**, RIT ASA DataFest

2024 **Reviewer: Technical Papers**, CHI, EICS, CUI, DIS

2023 **Reviewer**, CHI, CHIPLAY, CSCW, ICIS, VIS

Talks and Presentations

May 2023 **Presentation**, Research Potential Talk

Rochester, NY

Apr 2023 **Poster Presentation**, CHI'23 Late Breaking Work

Hamburg, Germany

Training and Teachings

Training Faculty Development Master Trainer, Machine Learning on Google Cloud, IBM Data Science, Google Data Analytics, Google Business Intelligence, Data Visualization with Tableau, Microsoft Power BI Data Analyst, Google UX Design, Humanities Responsible Conduct of Research.

Teaching Machine Learning, Programming, Data Science, Web Development (PHP, JavaScript), Human-Computer Interaction.

Writing Technical Writing at Medium, Course Book - "Web Design" for an open university.

Additional Experience

Hildreth Foundation

Remote, USA

Data Science Fellow - Volunteer

2024 – Present

- Automated data retrieval and pre-processing using AWS lambda functions, cloud-watch, and RDS.
- Enhanced visualization and dashboards to support decision-making with student-centered and equity-driven policy analysis of student debt.
- **Skills:** Dashboarding, AWS Automation, Tableau, Visualization.

Data Kind

Remote, USA

Data Expert - Volunteer

2023 – 2024

- Implemented and Deployed segmentation models with 3 other interns using Python, Plotly, and Pandas that allow the partner organization to tailor their service offerings.
- Addressed financial inclusion and economic challenges of underprivileged learners by optimizing training programs based on data analysis.
- **Skills:** Dashboarding, Data Analysis, Feature Engineering, Model Deployment, Git.