

Muhammad Raees

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Summary

I am a 3rd-year Doctorate student in Computer Science with a robust background and experience in Human-Computer Interaction, Machine Learning, and Software Development. I excel at implementing solutions for large-scale data analytics. I have published first-author papers at reputable conferences and journals. I am eager to apply my research skills and my collaborative mindset, particularly in quantitative analysis and machine learning to develop effective AI solutions that improve workplace experiences.

Education

Rochester Institute of Technology

Rochester, NY

PhD in Computing & Information Sciences – CGPA 4.0/4.0

August 2022 – (Expected) May 2026

- **Courses:** Big Data Analysis, Visual Analytics, Human-AI, Software Engineering, Research, Quantitative, & Cyberinfrastructure Foundations
- Graduate Research Assistant at Sappi-RIT Digital Innovation Lab. Worked in diverse projects involving large data analysis (SQL, Python, ML) with in the business context with Digital Transformation at Sappi Europe.
- 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
- Developed deep expertise in software development using test-driven, full-stack, and agile methods.

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*** (Data Analysis (pandas, numpy), Machine Learning (TensorFlow, scikit-learn), Flask), SQL*** (Large Data Systems), Java**, C+**, JavaScript**, R**, MATLAB*

Analytics

RDBMS***, NoSQL**, Big Query**, Spark**, Tableau**, Looker**, HighCharts**, React**, PowerBI*, Grafana* (Telemetry)

Research

User-Centered Design***, A/B Testing***, Hypothesis Testing***, Quantitative and Qualitative Analysis***, ML Prototyping***, Usability Studies***, Interviews (Design)***, Survey and Analysis***, Experimental Design**

Domains

Machine Learning***, Data Modeling***, Visualization (Analytics)***, Data Science***, Predictive Analytics**, 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 (Linked with Sappi Digital Transformation)

2022 – Present

- Conduct ML and HCI research using human-centered design and analytics tools, formulating approaches to solve real-world business problems.
- Design & evaluate research studies with interaction systems and methods (e.g., prototypes, quantitative experiments, A/B tests, hypothesis testing, interviews, surveys).
- Collaborate with diverse stakeholders to address business problems, and disseminate technical papers and present findings.
- Published peer-reviewed papers in reputed CHI venues and have multiple papers under-review.
- **Skills:** ML Prototyping, Data Analysis, Research Writing, Business Analytics, Collaboration, Communication.

Mirpur University of Science and Technology

Mirpur, Pakistan

Lecturer

2017 – 2022

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

Mirpur University of Science and Technology

Mirpur, Pakistan

Software Engineer

2014 – 2017

- Designed & managed databases and management systems using custom software development for organizational data needs.
- Designed & documented manuals for system interactions and experiment designs.
- **Skills:** Databases, Management, Integration, Reporting.

Selected Publications

JOURNAL ARTICLES

- Muhammad Raees**, Inge Meijerink, Ioanna Lykourantzou, Vassilis-Javed Khan, Konstantinos Papangelis (2024). "From explainable to interactive AI: A literature review on current trends in human-AI interaction". *International Journal of Human-Computer Studies*
- Awais Khan, Saadat Dar, Samina Fazilat, **Muhammad Raees**, Afazal Ahmed, Areeb Mir (2022). "An intelligent sentiment analysis system based on recent trends in machine learning". *Science International*. Pp. 217–224
- Muhammad Raees**, Khurram Abbasi, Tamim Khan, Ahmed Afzal, Samina Fazilat, Inam Ahmed (2021). "Context-Aware Services Using MANETs for Long-Distance Vehicular Systems: A Cognitive Agent-Based Model". *Scientific Programming*
- Muhammad Raees** (2020). "Study of software quality improvement through reliability metrics models and root cause analysis program". *International Journal of Computer Engineering and Information Technology*. Pp. 42–47

CONFERENCE PAPERS

- Muhammad Raees**, Vassilis-Javed Khan, Konstantinos Papangelis (2023). "Four Challenges for IML Designers: Lessons of an Interactive Customer Segmentation Prototype in a Global Manufacturing Company". *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, Hamburg, Germany
- Sehrish Manzoor, Nouman Ali, **Muhammad Raees**, Awais Khan, Ahmed Ahmed, Usama Ayub (2022). "Ancient coin classification based on recent trends of deep learning". *Proceedings of VIPERC2022: International Virtual Conference on Visual Pattern Extraction and Recognition for Cultural Heritage Understanding*

Relevant Projects

Interactive ML Assistive Business Analytics

- Developed an interactive assistive tool for business users to apply and evaluate segmentation models to their custom datasets to support in decision-making. The tool supports diverse functionality with enhance user control over ML models following user-centered approaches. Rigorous evaluations are conducted through user testing to study its efficacy and published (submitted) multiple research manuscripts.

Policy Analytics Through Emotions

- Developed an interactive macroeconomic analytics platform for financial policy analysis using multi-modal (text, voice, video) to extract emotions from monetary policy press conferences of big financial institutions. Integrated a web-analytics framework to support end-users explore and quantify uncertainty in financial markets based on non-verbal communication analysis.

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

Recent Service

2023-24	Data Expert Volunteer , Data Kind	Remote
2022-24	Reviewer: Technical Papers , CHI, IUI, EICS, CUI, DIS, CHIPLAY, CSCW, ICIS, VIS	Remote
2024	Data Science Volunteer, Client Acquisition , Statistics Without Border	Remote
2024	Data Science Volunteer , Hildreth Institute	Remote
2024	Technical Mentor , RIT ASA DataFest	Rochester, NY

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.