Abdul Rahman Shaikh

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Area of Expertise

As an ambitious research assistant pursuing a Ph.D. in Computer Science, I am versed in various programming languages like Python, Java, R, and C++. With a robust academic foundation and hands-on experience in groundbreaking fields such as Machine Learning, Data Analytics, Deep Learning, Computer Vision, and Visual Analytics, I am deeply passionate about pushing the boundaries of technology and research. My unwavering enthusiasm, problem-solving skills, keen curiosity, and steadfast commitment to continuous learning fuel my dedication to driving forward-thinking technological initiatives.

Education

Northern Illinois University Dekalb, IL
Ph.D. Computer Science; GPA: 3.9 *Aug 2020 - present*

Northern Illinois University Dekalb, IL
M.S. Computer Science; GPA: 3.9 *Jan 2018 - May 2020*

Osmania University Hyderabad, India
B.E. Computer Science; GPA: 3.2 *Aug 2013 - Aug 2017*

Experience

Research Assistant (DATA Lab & VA Lab) Jan 2018 - present
Northern Illinois University *Dekalb, IL*

- Spearheaded the development and refinement of advanced machine learning models, including Linear Regression, KNN, LDA, CNN, RNN, and BERT using Scikit-learn, TensorFlow, PyTorch, and Keras, resulting in advancements in data interpretation and predictive analytics in key research initiatives.
- Orchestrated the design of diverse computational models, harnessing techniques from Regularized Linear Regression, Kernel Linear Ridge Regression, Nfold cross-validation, Implementing Depth First Search, Breadth First Search, A* Algorithm, HillClimbing Agent, LDA, BERT on social media datasets.
- Advanced image processing through the application of neural networks, KNN, Single Layer Perceptron, Multi-Layer Perceptron, and Decision Tree Algorithms on given training data, significantly improving the accuracy and depth of image-based dataset analysis using Keras and PyTorch.
- Pioneered image processing techniques using algorithms like COCO and VGG16, adeptly employing K-Means for image clustering, facilitating insightful comparative studies across diverse data sources.
- Conducted topic modeling using LDA and BERT on generated captions and the hashtags for the clustered images to draw comparative analyses between the topics emanating from different data sources.
- Engineered the creation of multifaceted view systems employing a blend of JavaScript, Node.js, D3, HTML, and CSS, unveiling intricate patterns and relationships within complex datasets
- Administered an extensive user study, gathering critical data to inform and enrich a forthcoming research publication.

Teaching Assistant (CSCI 240 & CSCI 466) Aug 2018 - May 2020
Northern Illinois University *Dekalb, IL*

- Offered comprehensive academic support to classes exceeding 70 students, helping them tackle technical obstacles and enhancing their understanding and performance in C/C++ programming and databases.
- Evaluated various assignments and projects, offering constructive criticism emphasizing the execution of programs, the efficiency of coding practices, and the practical application of theoretical principles.
- Provided weekly office hours and personalized one-on-one tutoring sessions, assisting students with technical issues and enhancing their comprehension of programming and database concepts.

Quality Specialist Sep 2017 - Dec 2017

Amazon *Hyderabad, India*

- Learned SQL and MongoDB for complex data querying and structural manipulation, playing a crucial role in identifying and resolving system performance bottlenecks.
- Leveraged Python (Pandas, NumPy, Sklearn) for meticulous data analysis and cleansing, significantly boosting data quality and system reliability.
- Collaborated closely with development teams, providing data-driven insights and recommendations to refine and optimize database systems.

Publications

Published

- **A. R. Shaikh**, H. Alhoori, and M. Sun, "YouTube and Science: Models for Research Impact," *Journal of Scientometrics*, 2022. [*doi: 10.1007/s11192-022-04574-5*]
- **A. R. Shaikh**, M. Sun, H. Alhoori, "Toward systematic design considerations of organizing multiple views", IEEE Visualization and Visual Analytics (VIS), 2022. [*doi: 10.1109/VIS54862.2022.00030*]
- M. Sun, **A. R. Shaikh**, H. Alhoori, J. Zhao, "SightBi: Exploring Cross-View Data Relationships with Biclusters," *IEEE Transactions on Visualization and Computer Graphics*, vol. 28, no. 1, 2022. (Proceedings of IEEE VIS 2021). [*doi: 10.1109/TVCG.2021.3114801*] ***Best Paper Honorable Mention.***
- **A. R. Shaikh** and H. Alhoori, "Predicting Patent Citations to measure Economic Impact of Scholarly Research," in Proceedings of ACM/IEEE Joint Conference on Digital Libraries (JCDL), Champaign, Illinois, USA, June 2-6, 2019. [*doi: 10.1109/JCDL.2019.00089*]
- M. Shahzad, H. Alhoori, Reva Freedman, and **A. R. Shaikh**, "Quantifying the online long-term interest in research," *Journal of Informetrics*, 2022. [*doi: 10.1016/j.joi.2022.101288*]
- M. Sun, **A. R. Shaikh**, Y. Ma, D. Koop, and H. Alhoori "Boundary Blending: Reconsidering the Design of Multi-View Visualizations" 2023. [*doi: 10.48550/arXiv.2306.09812*]
- **A. R. Shaikh**, "Modeling the Broader Impact of Science and Health Using Social Media," Master's thesis. [*link*]

In Progress

- M. Sun, **A. R. Shaikh**, H. Alhoori, J. Zhao "iFoc: Interactive Tracing Cross-View Data Relationships". Target Conference: IEEE VIS 2024, Expected Submission: March 2024.
- **A. R. Shaikh**, H. Alhoori, M. Sun, M. Shahzad, "The Visual Pandemic: Captioning Instagram's Health Narratives through COVID-19 and Beyond." Target Journal: IJCV, Expected Submission: June 2024.
- **A. R. Shaikh**, H. Alhoori, M. Sun, "From Video to Paper: Unraveling the Connection Between YouTube Narratives and Scholarly Research via LLMs". Target Conference: JCDL 2024, Expected Submission: July 2024.
- M. J. Mokarrama, **A. R. Shaikh**, H. Alhoori, "The Impact of Research on Policy: A Study of Citation Patterns in Youth Policy Documents." Target Conference: CSCW 2025, Expected Submission: July 2024.

Projects

LineGuider: Exploring cross-view data relationships via traversal | *JavaScript, D3* May 2022 – Present

- Developed a novel interactive tool using JavaScript, D3.js, and Python, to facilitate exploration of cross-view relationships in multiple view systems, leveraging visual analytics and HCI techniques for enhanced data understanding.

Visual Health Culture: Decoding Instagram Posts | *Python, CV, NLP, Instaloader* May 2021 – Present

- Advanced an image captioning system with Keras, PyTorch, OpenCV, NLTK, and Spacy for deep learning and NLP using CNNs, RNNs, and DNNs for analysis of Instagram posts to narrate visual health narratives through Instagram content analysis.

Exploring Visual Analytics with missing data | *Javascript, D3, Node.js* Aug. 2021 – Dec 2021

- Exploring the necessity and impact of visualizing missing data in analytics through literature, this project assesses whether visualizations aid in understanding missing data, how such visualizations can be effectively implemented, and their pros and cons, thereby enhancing decision-making and data quality awareness.

TweeTopics: Uncovering Patterns with BERT and LDA | *Python, BERT, LDA* Aug. 2020 – Dec. 2020

- Implemented BERT and LDA for deep learning text and topic modeling, employing unsupervised learning algorithms analyze social discourse dynamics on Twitter

Urban Pedals: Visualizing BikeShare Dynamics in Chicago | *Python, R, Tableau* Jan. 2019 – May 2019

- Utilized Python, Pandas, and R for data analysis, and JavaScript libraries like Leaflet for interactive visualizations, applying clustering algorithms and time-series analysis in MATLAB to uncover patterns in Chicago's BikeShare system, revealing urban transportation patterns.

SignDecoder: Real-Time Prediction of Sign Language via AI | *Python, CV, PyTorch* Aug. 2019 – Dec. 2019

- Created a real-time sign language prediction platform with Python, Keras, PyTorch, and OpenCV, using CNNs and long short-term memory (LSTM) networks for deep learning-based computer vision, facilitating communication for the hearing-impaired.

Predicting popularity using Altmetric | *Python, ScikitLearn, API (Altmetric)* Jan. 2018 – May 2018

- Employed ScikitLearn and Python for predictive modeling using regression algorithms and decision trees to forecast future citation counts of scholarly articles using Altmetric data, identifying early impactful research.

WashAway: Your Laundry Attendant App | *AndroidStudio, Java* May. 2016 – Dec 2016

- Created a revolutionary app designed to streamline the often mundane and time-consuming task of doing laundry. This innovative platform functions much like popular ride-sharing or food delivery services such as Uber or DoorDash, providing users with the convenience of on-demand laundry services right at their fingertips.

WhisperNet: Cloud Storage via Deniable Attribute encryption | *JavaScript, DES* May. 2016 – July 2017

- Pioneered an innovative approach to data security in the cloud storage domain. This initiative introduces a dual-tier security architecture designed to fortify data against a wide spectrum of threats, both external and internal.

Presentations

- **Toward systematic design considerations of organizing multiple views**, *IEEE VIS*, Virtual, Oct. 18 2022
- **Predicting Patent Citations to measure Economic Impact of Scholarly Research**, *JCDL 2019*, Urbana-Champaign, June 4, 2019
- **Exploring COVID data using Instagram Images**, *CSCI 656*, DeKalb, April 26, 2022
- **Modeling the Broader Impact of Science using Social Media**, *CSCI 600*, DeKalb, March 4, 2022
- **Utilizing Multiple Views to analyze data**, *CSCI 658*, DeKalb, Dec. 5, 2023
- **Organizing layout of Multiple View systems**, *CSCI 628*, DeKalb, May 5, 2021
- **Cross-Device interaction**, *CSCI 626*, DeKalb, May 4, 2021
- **Visualizing BikeShare Dynamics in Chicago**, *CSCI 627*, DeKalb, May 6, 2019

Honors & Awards

- **Best Paper Honorable Mention**, *IEEE VIS*, 2022
- **Community Service Award**, 2019
- **Society Involvement Award**, *Honor Society*, 2020

Skills

Languages: Python, R, Node.js, PHP, JavaScript, C, C++, MATLAB, HTML/CSS, Java, LaTex
Tools: NLTK, Keras, PyTorch, LDA, BERT, Pandas, ScikitLearn, Spacy, OpenCV, AndroidStudio, Git, Unix Shell
Others: MySQL, MongoDB, MS Office, Excel, Android, CSS, Windows, Linux

Leadership

- **Chief Coordinator**, *Computer Society of MJCET*, Hyderabad, 2017
- **Leader – Web/Graphic Design Head**, *Entrepreneurship Cell, MJCET*, 2017
- **Lead Developer**, *College's Annual Technical Fest Website (Adsophos)*, 2016

Other Professional Information

Program Committee Member

- CIKM 2023

Reviewer

- Scientometrics Journal
- Frontier of Psychology
- New Media & Society
- PacificVis

Professional Memberships

- IEEE