# Alina Faisal

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## Education

**University of Michigan** **Ann Arbor, MI**

*Master of Health Informatics; Focus in Data Science, Data Analytics, and User Experience (UX) Design* *May 2026*

- Coursework: Programming in Python, Statistics and Data Analysis using R, Health Informatics, Networks, Interaction Design, SQL and Databases

**Lahore University of Management Sciences** **Lahore, Pakistan**

*Bachelor of Science in Economics and Mathematics; Minor in Computer Science* *June 2024*

- Dean's List Recipient
- Coursework: HCI, Generative AI, Machine Learning, Data Science, Ethics in IT, Applied Probability, Statistics, Data Structures, Data Mining, Database and SQL, NLP, Econometrics (Time Series), Object-Oriented Programming, Software Engineering, Data Visualization, Principles of UX, ICT4D

## Professional Experience

**Formstack** **Ann Arbor, MI**

*Project Lead for Client-Based Healthcare Workflow Automation* *September 2024 - Present*

- Analyzed hospitals' workflow using LucidSpark for affinity wall with stakeholder insights from interviews and secondary research, identifying barriers in transitioning from manual to AI-driven systems while addressing privacy constraints, which reduced administrative workload by 20% and enhanced patient intake and compliance processes.
- Implemented an insurance eligibility feature prototype and an in-app scanner integration concept to streamline administrative processes, enhance data security, and improve patient-practitioner interactions for healthcare providers.

**Graduate Student Instructor (GSI)** **Ann Arbor, MI**

*University of Michigan and LUMS* *September 2022 – Present*

- **SI 564**: SQL and Databases (Spring 2025) - Full-time GSI to Graduate students under Professor Michael's tutelage.
- **SI 608**: Networks (Fall 2024) - Full-time GSI to PhD and second-year Master's students under Dr. Ceren's tutelage.
- **CS100**: Computational Problem Solving (Fall 2022), **Math 102**: Calculus II (Multivariate Calculus) (Fall 2022), **CS 535**: Machine Learning (graduate level course) (Fall 2023) **CS 466**: Human-Computer Interaction (Spring 2024).
- Prepared and graded exams, labs, and coding assignments, while holding tutorials, office hours and leading group projects.
- For the ML course, created neural networks, and transformers from scratch and employed PyTorch for audio classification and language model training. Introduced an unexplored open-source Python library, Gradio to build ML demos.
- Conducted a Figma and Python workshop for over 100 students, providing industry-relevant UI/UX Design and object-oriented programming skills.

**Brock University** **St. Catherines, Canada**

*Mitacs Globalink Research Intern (GRI)* *June 2023 – August 2023*

- Conducted data preprocessing, and manipulation to prepare cardiovascular health dataset for analysis, and created visualizations to identify patterns ensuring data quality and consistency for accurate modelling.
- Developed submodels through feature selection (SHAP using XGBoost library and random forest) and conducted performance analysis through S-ML algorithms to compare the risk factors under the supervision of **Dr. Ejaz Ahmed**.
- Calculated BIC scores and implemented linear and James-Stein shrinkage estimator strategies.
- Created a Causal Diagram, using DAGitty 3.0, with the variables as nodes and the association (causal/non-causal) between variables as edges with death event being the outcome variable.
- ***Manuscript:*** "A Comparative Study of Predictive Supervised Machine Learning Algorithms on Cardiovascular Diseases (CVDs)" (published in the Journal of *Population Therapeutics and Clinical Pharmacology*).

**LUMS** **Lahore, Pakistan**

*Countering Misinformation Research Intern* *January 2023 – May 2024*

- Conducted randomized control trial with 200+ participants using interviews/surveys to study misinformation; designed game-based digital media literacy interventions in Pakistan, and created visualizations using Matplotlib.
- Leveraged statistical tools like SPSS to analyze data through t-tests and Kolmogorov-Smirnov tests to evaluate the effectiveness of the gamification-based study on countering the spread of fake news.
- Developed and designed game-based digital media literacy interventions for countering misinformation in Pakistan under the supervision of **Dr. Ihsan Ayyub Qazi** and **Dr. Ayesha Ali**.

**Centre for Speech and Language Technologies** **Lahore, Pakistan**

*ASV Spoofing Detection Research Intern* *September 2022 – December 2023*

- Worked on Automatic Speaker Verification (ASV) biometric recognition technology, categorized by ASVspoof as logical and physical access attacks under the supervision of **Dr. Agha Ali Raza**. Curated a specialized dataset for Urdu to train against spoofing attacks, due to the scarcity of data for low-resource languages.
- Recorded Phonetically Rich Urdu Speech (PRUS) Corpus, which consisted of a comprehensive list of all phonemic and tri-phonemic combinations in Urdu (based on an 18-million-word corpus of Urdu news articles).

**AdAxiom** **Lahore, Pakistan**

*Software Engineering Intern* *August 2022 – September 2022*

- Built responsive web interfaces using HTML, CSS, JavaScript, and React, leveraging Figma for design prototyping and implementing reusable components while integrating dynamic client-side behaviours, resulting in a 35% improvement in usability scores during subsequent user testing.
- Implemented SQL for efficient data management, designing and optimizing queries to retrieve and display user data dynamically within web interfaces, enhancing functionality and responsiveness in client applications.

**KPMG** **Lahore, Pakistan**

*Business Intelligence Intern* *June 2022 – August 2022*

- Developed and scaled cross-functional BI solutions, including data sets, SQL queries, reports, and Tableau dashboards, resulting in a 25% improvement in data-driven decision-making and saving 40 hours per month in manual reporting.
- Designed a visual proof of concept for the C-suite, clarifying strategic objectives and accelerating decision-making by 25%. Managed the full lifecycle of BI projects, ensuring timely execution and alignment with business requirements.

## Project Experience

**Nevada Homeless Alliance Application, UI/UX Designer and Developer** **September 2024 – Present**

- Designed a comprehensive research study using thematic analysis and A/B testing to synthesize insights from interviews, surveys, and focus groups, identifying navigation pain points and driving a 30% increase in task completion rates.
- Spearheaded 50 iterative usability testing sessions and conducted narrative analysis to identify key app features, refining home screen wireframe layouts, which improved design functionality, and boosted positive user reviews.
- Developed high-fidelity prototypes in Figma and implemented responsive design elements to streamline navigation and interaction flows, which resulted in a 30% increase in user satisfaction and uncovered critical insights for refinement.
- Built an interface using Flutter and Dart, incorporating layouts with font sizing and color contrast for navigation.
- Developed backend using Django for robust RESTful APIs and secure user authentication with JWT, combined with Flask for lightweight microservices handling real-time emergency alerts; utilized PostgreSQL for data storage and querying, ensuring seamless integration with the Flutter frontend for dynamic resource delivery.

**Information Diffusion and Network Analysis, Machine Learning Analyst** **July 2024 – September 2024**

- Developed information diffusion models using retweet networks, constructing directed graphs to map the spread of COVID-19-related information from key Twitter influencers (scientists, doctors, and journalists).
- Analyzed cascade properties including depth, breadth, assortativity, out-degree centrality, and closeness, to quantify how efficiently information spreads from different professional groups across Twitter networks.
- Performed statistical tests (ANOVA) to compare diffusion patterns between groups, showing significant differences in cascade sizes and depths, highlighting deeper cascades from scientists versus wider, shallower cascades from politicians.
- Visualized key metrics with scatterplots, box plots, and violin plots, correlating follower count with cascade size, and revealing that scientists had smaller but deeper information cascades, suggesting more effective targeted diffusion.

**Health Management Application, UI/UX Designer and Researcher** **January 2024 – May 2024**

- Identified issues faced by women with PCOS by conducting 10 semi-structured interviews, one focus group and a survey to gauge the user research method regarding PCOS management - working on its web application.
- Conducted in-depth user research, created user personas, scenarios, user flows, storyboards, wireframes and high-fidelity prototypes in Figma, incorporating user flows and feedback through iterative design processes.
- Analyzed data using thematic analysis for the "Shifa" app, evaluated the prototype using Nielsen's Usability Heuristics and incorporated feedback from usability tests.

**Accessible Speech Therapy Web Application, Frontend Software Developer** **January 2023 – April 2023**

- Developed front-end for an accessible speech therapy web application using HTML, CSS, and JavaScript, crafting a responsive and user-friendly interface tailored for people who stutter (PWS) with seamless navigation for users.
- Designed an intuitive layout using Figma and Sketch, incorporating interviews, storyboards, contextual inquiry, mock-ups, usability testing, reducing user drop-off rates by 25% and improving virtual therapy engagement.

**Language Classification, Machine Learning Engineer** **October 2023 -December 2023**

- Delivered a Big-Data Language Classification project using AWS and T4 GPU to develop a robust model for identifying and classifying six types of toxic comments, achieving 98% accuracy through models (Naive Bayes, SGD, logistic regression, BERT, LLaMA2).
- Pre-processed the dataset and created Bag of Words for Naive Bayes, fine-tuned the dataset for the Bert encoder model, utilizing training samples to generate binary vectors on each comment, and for the pre-trained LLMs on T4 GPU.
- Evaluated model performance using F1 score, precision, and accuracy, and proposed further fine-tuning to enhance the model's ability to detect toxicity with high reliability.

**Social Media Authorship Attribution, Machine Learning Engineer** **October 2022 - December 2022**

- As a lead ML developer, scrapped 5000 tweets from 5 trending Twitter handles using public Twitter APIs: @espn, @Google, @Starbucks, @ndtv, @urstrulyMahesh, and @VP.
- Built a collective vocabulary and evaluated the performance on the three experiments - kNN, Neural Networks and Ensemble Methods models - for the corresponding bag of words and word embeddings to get the features.
- Analyzed the models through evaluation metrics - F1-score, precision and accuracy - and proposed future advancement of creating a hybrid architecture combining neural networks and deep learning methods.

**Fitting of Multiple Linear Regression Model, Data Scientist** **February 2022 - April 2022**

- Extracted data from the Kaggle database named "Maternity and Child Health" to predict the birth weight of infants based on various risk factors using multiple linear regression and applied various diagnostic checks in R language.

## Publications

**International Journal of Politics and Social Sciences Review** **November 2024**

- *Manuscript:* "Revisiting Output and Monetary Uncertainty and Money Demand in Asia"(worked on the methodology)

**Journal of Positive School Psychology, Turkey** **January 2023**

- *Manuscript:* "Impact Of Kahoot! On Students' Engagement And Learning Outcome At The Elementary Level In Pakistan: Their Perception Towards Kahoot! Assessment" (worked on the methodology)
- *Manuscript:* "Effect Of Innovative Leadership Prompted By Technology On Empowering English Language Teachers In Pakistan" (worked on the methodology)

**Pakistan Journal of Social Sciences** **August 2022**

- *Manuscript:* "Ubiquitous Learning Workforce in the Learning World: the Middle Class"(worked on the methodology)

## Technical Skills

**Languages**: C++, Python, R, STATA, SQL, Javascript, Matlab, Tableau, HTML/CSS, Bootstrap, SAS, Advanced Excel.
**Tools**: Django, Flask, Bash, Github, Jupyter, Adobe XD, VS Code, Arduino, Latex, SPSS, AWS, API, PowerBI, Qualtrics.
**Frameworks**: React, NetworkX, Pandas, NumPy, Matplotlib, Scikit-learn, TensorFlow, PyTorch, RejEX, Altair.
**UX Design**: Figma (Hi-Fi Prototyping), A/B and Usability Testing, Task Analysis, Affinity Diagram, Evaluations.
**User Research**: Qualitative and Quantitative Research, Surveys, Interviews, Focus Groups, User Personas and Flows.

## Leadership / Extracurricular

- Core Team Leader at Google Developer Student Club
- General Secretary of LUMS Data Science Society