Syed Faizan, MD

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Github: https://github.com/SYEDFAIZAN1987
Huggingface: https://huggingface.co/DrSyedFaizan

Graduate Student | Data Analyst | Machine Learning & AI Enthusiast
Current GPA: 4.0

Bringing over a decade of experience as a physician, I integrate healthcare domain expertise with advanced skills in data analytics, machine learning, and AI. Currently pursuing a Master's in Data Analytics and Applied Machine Learning at Northeastern University, my special interests include medical imaging analysis, predictive modeling, retrieval augmented generation, and AI-driven decision-making for complex data challenges.

My expertise spans:

✔ Data Analysis: Exploratory Data Analysis, Statistical modeling.
✔ Machine Learning & Deep Learning: Supervised & Unsupervised Learning, NLP, Computer Vision
✔ Big Data & Cloud Technologies: SQL, Python (Pandas, Scikit-Learn, TensorFlow, PyTorch), AWS, Azure
✔ Data Visualization & Business Intelligence: Power BI, Tableau, Matplotlib, Seaborn,Plotly,GGPlot

TECHNICAL SKILLS

AI in Healthcare, Applied Machine Learning, Artificial Intelligence, Clinical Research, Data Analysis, Deep Learning, LaTeX, Machine Learning, Python, R Programming Language, SQL, Statistical Analysis

LANGUAGES

English (Native Fluency) , Hindi, Urdu (Native) ,Kannada (Native) , German (Intermediate), Persian (Advanced) , French (Reading Competence), Modern Standard Arabic(Reading Competency)

PROJECTS

3D Liver and Liver Tumor Segmentation • 02/2025 - Present

Developed a **3D Liver and Liver Tumor Segmentation** model using a UNet-based architecture for volumetric medical images. Implemented 3D convolutions, encoder-decoder structure with skip connections, and cross-entropy loss for optimization. Achieved precise segmentation, validated through loss function analysis and qualitative visual evaluation on 3D medical datasets.

Left Atrium Segmentation • 02/2025 - Present

Developed a **Left Atrium Segmentation** model using U-Net for cardiac MRI images. Implemented an end-to-end pipeline with advanced data augmentation (elastic transformations, rotations, affine augmentations). Achieved a high **Dice Similarity Coefficient (0.95)**, ensuring accurate atrial boundary segmentation for improved clinical assessments.

Cardiac Detection using a customized ResNet-18 model • 02/2025 - Present

Developed a **Cardiac Detection** model using a customized **ResNet-18** architecture with **PyTorch Lightning** to identify cardiac abnormalities from medical images. Implemented **Class Activation Mapping (CAM)** for visualizing key regions. Achieved high detection accuracy with efficient training and robust performance on annotated cardiac imaging datasets.

Pneumonia Classification Model using ResNet-18 • 02/2025 - Present

Developed a **Pneumonia Classification Model** using **ResNet-18** for chest X-ray image analysis. Achieved high validation accuracy (up to 84.5%), precision, and recall. Implemented **Class Activation Mapping (CAM)** for visualizing key features. Evaluated performance using precision, recall, confusion matrices, and both weighted and non-weighted accuracy metrics

Artificial Neural Network (ANN) for MNIST Dataset • 01/2025 - 02/2025

Developed an **Artificial Neural Network (ANN)** using PyTorch for handwritten digit classification with the MNIST dataset. Implemented data augmentation, ReLU activation, and Softmax output. Achieved 98.5% training and 97.8% validation accuracy. Evaluated performance using accuracy metrics and confusion matrix visualization for model assessment.

Convolutional Neural Network (CNN) for MNIST Dataset • 01/2025 - 02/2025

Developed a **Convolutional Neural Network (CNN)** using PyTorch for handwritten digit classification with the MNIST dataset. Implemented convolutional layers, max pooling, and fully connected layers with ReLU and Log

Softmax activations. Achieved high accuracy of 0.98 through supervised learning, with performance evaluated via accuracy metrics, loss curves, and confusion matrix.

RAG Enhanced Presentation Platform (REPP) • 11/2024 - 01/2025

United Way Greater Toronto

Tools & Technologies: OpenAI GPT-3.5-Turbo API, FAISS, MySQL, Firebase,Streamlit, Power BI

- Developed a web-based application to streamline academic and professional presentations, integrating Retrieval-Augmented Generation (RAG) for interactive AI-supported reports.
- Implemented FAISS for efficient document retrieval and validated performance using the Stanford SQuAD dataset. Future improvements include mobile applications and cloud integration.

First Aid Tutor • 12/2024 - 01/2025

Mysore Medical College and Research Institute

Developed **First Aid Tutor**, an AI-powered RAG chatbot for Mysore Medical College to enhance medical education. Utilized TF-IDF and cosine similarity for evidence-based first-aid guidance. Integrated with Gradio UI, achieving high answer relevancy (0.94), correctness (0.91), and semantic similarity (0.97) in RAGAS evaluations.

CommunityServiceBot • 01/2025

CareFirst

- I developed the evaluation pipeline and tuned the Community Service Chatbot, which is a proprietary AI-driven assistant designed for Carefirst Ontario Services, primarily serving seniors in Toronto.
- The chatbot leverages Giskard for robust Retrieval-Augmented Generation (RAG) evaluation using varied metrics to ensure accuracy and relevancy of responses.

DiabetesDietBot • 01/2025 - 01/2025

Mysore Medical College and Research Institute

Developed **DiabetesDietBot**, an AI-powered chatbot for Mysore Medical College, leveraging RAG, FAISS, and GPT-3.5-turbo to generate personalized Type 2 diabetes meal plans. Integrated Gradio UI for user interaction, optimized South Indian diets, and achieved high relevancy (0.96) and semantic similarity (0.94) in evaluations.

Airbnb Analysis of Short-Term Rentals in NYC

Tools & Technologies: R, Python, Tableau, LASSO & Ridge Regression
Description: Conducted an in-depth analysis of Airbnb rental trends in NYC using regression models and statistical analysis. Identified neighborhood and room type impacts on pricing, and developed predictive models to optimize rental strategies. Created Tableau dashboards for interactive visualization.

Customer Churn Prediction

Tools & Technologies: Python, Scikit-learn, SMOTE, Random Forest, Neural Networks
Description: Designed and compared machine learning models to predict customer churn, addressing class imbalance using SMOTE. Utilized decision trees, SVMs, and neural networks to optimize predictive performance, achieving an AUC of 0.86 with Random Forest.

Cost-Benefit Analysis of Dam Construction Projects

Tools & Technologies: Excel, Monte Carlo Simulations, Chi-Squared Tests
Description: Conducted economic feasibility analysis for two proposed dam projects using simulation-based benefit-cost ratios. Recommended the most viable project based on probability distributions and sensitivity analysis.

Inventory Management Decision Model

Tools & Technologies: Excel, R, Solver, EOQ Model
Description: Developed an Economic Order Quantity (EOQ) model for inventory optimization in a manufacturing company. Used Solver to validate results and performed sensitivity analysis to determine cost-effective inventory strategies.

Maximizing Profit: Optimization Model for Inventory Management

Tools & Technologies: Excel, Linear Programming, Sensitivity Analysis
Description: Designed a profit-maximizing inventory allocation model for a hardware company expanding into a new region. Conducted sensitivity analysis to optimize inventory levels, budget, and warehouse space allocation.

Time Series Forecasting of Stock Prices

Tools & Technologies: Excel, Exponential Smoothing, Regression Analysis
Description: Forecasted Apple Inc. and Honeywell stock prices using time series models. Applied exponential smoothing and weighted moving averages to predict stock trends, optimizing portfolio allocation.

Transshipment Model and Risk Minimization

Tools & Technologies: Excel, Linear Programming
Description: Developed a transshipment optimization model to minimize shipping costs and balance supply-

demand across warehouses. Conducted risk analysis and cost-effectiveness evaluations using sensitivity analysis.

Electric Vehicles Market Before Tesla: R Shiny Application

Tools & Technologies: R Shiny, Tableau, Data Visualization
Description: Built an interactive dashboard to analyze electric vehicle adoption trends, evaluating manufacturer strategies and Clean Alternative Fuel Vehicle (CAFV) incentives.

Heart Disease Prediction Using SVM

Tools & Technologies: Python, SVM, GridSearchCV
Description: Developed a predictive model using Support Vector Machines to classify heart disease cases. Achieved 99.03% accuracy with optimized hyperparameters, demonstrating high sensitivity and specificity.

Investing in Nashville: Predictive Modeling for Real Estate

Tools & Technologies: Python, Decision Trees, Random Forest, Gradient Boosting
Description: Predicted undervalued and overvalued properties using machine learning models, assisting real estate investors in making data-driven decisions.

Loan Approval Prediction Using Machine Learning

Tools & Technologies: Python, Logistic Regression, Random Forest, XGBoost
Description: Built machine learning models to predict loan approvals, optimizing model performance with SMOTE and ensemble techniques.

Magazine Subscription Behavior Analysis Using Logistic Regression and SVM

Tools & Technologies: Python, SVM, GridSearchCV
Description: Analyzed customer behavior and marketing campaign effectiveness using predictive models to optimize subscription strategies.

House Price Prediction Using Linear Regression

Tools & Technologies: R, Linear Regression, Feature Engineering
Description: Predicted housing prices in Ames, Iowa, using regression models, addressing multicollinearity and optimizing feature selection.

Analyzing Income Inequality Using KNN

Used Car Sales Analysis

Tools & Technologies: R, Regression Modeling
Description: Analyzed used car pricing trends and key valuation factors using regression models.

WORK EXPERIENCE

Tarsal Education Technologies, Toronto, Ontario, Canada. • Remote • 03/2024 - 12/2024

Data Analyst and Scientific Advisor • Contractor

- Led NLP projects that extracted actionable insights from educational datasets, improving decision-making processes for stakeholders.Prepared project schema, advised on educational content.

Cauvery Hospitals • Hunsur, Karnataka, India • 08/2023 - 12/2023

Resident Physician

- Provided exceptional direct care for 200 patients in Medicine & Gen Surgery, resulting in high patient satisfaction and improved health outcomes.

Department Of Community Medicine • Mysore, Karnataka, India • 04/2022 - 01/2023

Research Assistant

- Successfully collected data from 500+ school children in Mysore District for the General Health Survey, contributing to public health research. Analysed the data for insights and improved efficiency in data collection.

Cactus Communications Pvt Ltd • Remote • 10/2021 - 03/2022

Pharma Regulatory Editor

- Collaborated with cross-functional teams to ensure timely submission of regulatory documents, resulting in successful approval of multiple products and a 95% on-time submission rate.

Elite Nursing Home • Mysore, Karnataka, India • 01/2016 - 12/2020

Family Physician

- Delivered exceptional care to 25 inpatients and 200 outpatients weekly, leading to improved health outcomes and satisfied patients.

Ashwini Clinic • Mysuru, Karnataka, India • 10/2011 - 03/2015

Resident Physician

- Managed primary care for 100 outpatients every week in General Medicine, resulting in improved health outcomes for patients.

K. R. Hospital and Cheluvamba Hospital • Mysuru, Karnataka, India • 09/2010 - 09/2011

Resident Intern

- Hands-on experience in primary and tertiary care settings in 18 different departments of clinical medicine.

EDUCATION

Master's in Data Analysis and Applied Machine Intelligence

Northeastern University • Toronto, Canada • 01/2024 - 12/2025

M.B.B.S (MD Equivalent, Bachelor Of Medicine and Bachelor Of Surgery)

Rajiv Gandhi University of Health Sciences, Mysore Medical College • Karnataka, India

PUBLICATIONS

Abhishekh, H. and Faizan, S. (2012)

Australian & New Zealand Journal of Psychiatry

John Cade (1912- 1980), pp.68-69

Faizan, S., Raveesh, B., Ravindra, L. and Sharath,K. (2012)

BMC Proceedings

Pathways to psychiatric care in South India and their socio-demographic and attitudinal correlates.

Faizan, S., Raveesh, B,Anjali, V., Lakshmanagowda Sujatha,R. and Sharath,K. (2012)

BMC Proceedings

The attitude of non-psychiatry doctors to psychiatry and its correlates in Mysore, South India.

ENGLISH COMPETENCE

IELTS General 9/9 Overall Band

IELTS

IELTS Academic 8.5/9 Overall Band

IELTS