MOHAMMED FARHAN BALUCH

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I also hold valid reliability security clearance status from Government of Canada

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PROFILE OF SKILLS

- **Proficiency in Machine Learning** experience exhibited through several projects & research studies, **2** conference presentations, **3** journal publications and recent experience as an AI developer
- **Expertise of Python Programming** experience demonstrated through courses by scoring **90%+** consistently, as a programming intern and leading several projects, including chatbot system, which involved heavy Python usage
- **Data Analysis & Database Management Skills** exhibited through advanced data analysis Nasscom certification and successful projects like the 'internet usage v/s suicide rate' & 'PDF parser tool' involving comprehensive data handling & creating of insightful PowerBI dashboards
- **Web-Development Skills** denoted by working as a Web Development Intern and passing the Microsoft certification 'MTA – HTML & CSS'
- **Problem-Solving, Leadership, and Communication Skills** portrayed through leading a chatbot project for a university website, collaborating with several professors and colleagues for research studies, and holding lab sessions for undergraduate students

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TECHNICAL SKILLS

- **Languages/Databases:** Python, PySpark, C, C++, Java, MongoDB, MySQL, NoSQL
- **Machine Learning:** Scikit-learn, TensorFlow, Keras, PyTorch, NLTK, OpenCV, Pandas, NumPy, Seaborn, Matplotlib, Transformer, BERT, GPT, LSTM, GNN, spaCy, XGBoost, LGBM, SHAP, Lime, Optuna
- **Platforms:** Git, Gitlab CI/CD, Docker, Kubernetes, Azure DevOps, Azure ML, Databricks, GCP, Apache Hadoop, Spark, OpenAI API, Power Automate, UI Path, Microsoft SQL Server, AWS EC2, SageMaker, Streamlit, A/B testing, Terraform, Unix, Jira, Power BI, .NET, React, jQuery, Spring Boot, Postman, RESTful API
- **Data Science:** Prediction, Timeseries, Quantile Regression, Outlier Detection, Hypothesis Testing, Statistical modeling

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EDUCATION

Master of Science Computer Science Artificial Intelligence Stream Co-op Sep 2022 - Present
University of Windsor, Windsor, ON
- Cumulative GPA: **92.2** / 100

Bachelor of Technology in Computer Science Jul 2018 - Jul 2022
Vit Bhopal University, Bhopal, IN
- Cumulative GPA: **8.95** / 10.0

EXPERIENCE

Artificial Intelligence Developer, Agriculture & Agri-Food Canada, Harrow, ON May 2023 - Aug 2023
- Spearheaded the development of a high-precision plant disease identification model, achieving a groundbreaking **98.3%** accuracy for powdery mildew detection
- Co-engineered an advanced Agri-Foods chatbot utilizing the GPT-4 architecture, integrating Azure ML for enhanced customer interaction and support
- Innovated an internal PDF Parser tool for the HR department, enabling efficient extraction and dashboard visualization of key document data with Spacy and PowerBI
- Optimize model hyper-parameters using Bayesian optimization techniques - random search & gridsearch.
- Fostered collaborative efforts - Standups, Git, and Azure Boards with cross-functional teams within an agile project environment.

Teaching Assistant (Fastlane - DaRMoD), Vector, Remote, ON Jan 2024 – Apr 2024

- Developed and delivered comprehensive tutorials in data readiness, model development, and deployment, effectively simplifying complex AI and machine learning concepts for Startups.
- Provided constructive feedback and evaluations on company projects, leveraging expertise in machine learning to enhance project outcomes.

Graduate Teaching Assistant, University of Windsor, Windsor, ON   Sep 2022 - Apr 2023
- Conducted lab sessions and solved students' queries for **50+** students every week for Computer Architecture (COMP-2660) and Systems Programming (COMP-2560) courses
- Grading **50+** students' exam papers and assignments and held 1-on-1 sessions for students in need of extra help

Programming Intern, Coderspacket, Vadodara, India   Apr 2021 - Jun 2021
- Developed **3** reusable open-source code packets using JAVA & Python. Packets included facial recognition system, registration system for colleges & chatbot interface
- Created packets were deployed using Docker and downloaded **100+** times by fellow developers for use in bigger open source projects & scaling applications & process improvement
- Performed functional testing and debugging for developed packets
- Worked in the transition of a monolithic app into a microservice architecture using .NET & C# as part of a team

Web Development Intern, Verzeo, Vadodara, India   Dec 2019 - Jan 2020
- Responsible for developing and designing login, registration, and other fragmented components using HTML, CSS, JavaScript, Material-UI and React framework.
- Worked closely with team members and actively participated in weekly Agile meetings with Jira
- Led a team of **4** members to execute the back-end functioning of the site using NodeJS, SQL & Git.
- Worked on producing dynamic data graphs for company's website using JavaScript library - D3.js

Paper Reviewer & Program Committee Member, IEEE - AIC, Remote   May 2022 - Jun 2022
- Reviewed & critiqued **10** research papers for the IEEE world conference - Applied Intelligence & Computing and gave detailed feedbacks on scope of improvements
- Ensured smooth conduct of conference by holding meetings with other committee members and helping technical team by creating data reports & providing creative solutions for quality improvement

Course Mentor, DEEPLEARNING.AI, Remote   Aug 2021 - Dec 2021
- Mentored **50+** students for 'AI for Medicine' course on Coursera & solved programming-related queries & content queries using insightful solutions
- Suggested **4** major improvements in course contents & shared data analytics, and prepared reports for the DLAI team to improve quality, customer satisfaction & service delivery
- Updated technical documentations to enhance course delivery process

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PROJECTS

SAM - College Chatbot   Dec 2021 - May 2022
- Led a team of **4** on a retrieval-based Natural Language Processing (NLP) chatbot to automate common college-related queries responses, used by **700+** students, deployed using Azure services
- Constructed using Scikit-learn & NLTK packages in Python and optimized response generation using TF-IDF approach & cosine math similarity to achieve **92%** accuracy
- Deployed UI Path to automate text data collection from college web pages; Automated the testing and deployment of the application using Gitlab CI/CD pipeline

Ethereum Fraud Detection   Jul 2021 - Nov 2021
- Applied various data analysis methods on Ethereum blockchain datasets to build a solution for preventing frauds
- Devised a modified Light Gradient Boosting Machine (LGBM) algorithm for accurately detecting fraudulent transactions and tuned model with hyper-parameters' optimization to achieve an accuracy of **99.03%**
- Performed a comparative analysis with **12** best machine-learning algorithms and deploying using AWS SageMaker

Internet Usage v/s Suicide Rate Analysis Apr 2020 - Aug 2020
- Proved hypothesis where internet usage is directly related to the number of suicides leveraging data analysis & interpretation tools in Python
- Implemented data mining using SQL to analyze the unstructured large dataset and uncover trends & patterns
- Developed ETL pipelines for extracting data and performed transformations to clean data using Azure Databricks
- Loaded data into the data warehouse to analyze data using Azure Synapse Analytics to visualize it using Power BI

Sentiment-driven Stock Prediction
- Developed a cutting-edge stock prediction model by incorporating semantic analysis and sentiment features extracted from textual data sources, such as news articles and social media posts
- Integrated financial news data and stock market data using the AlphaVantage API and Implemented an LSTM (Long Short-Term Memory) attention model using PyTorch for stock price prediction
- Achieved outstanding performance metrics on historical IBM stock data, including a Mean Squared Error (MSE) of **0.046**

Fish Image Classification
- Identified fish ecosystem species by utilizing segmentation of fish images obtained from dataset with over 9000 images and 20 features
- Compared feature extraction performance with Inception, ResNet, EfficientNet etc. models to validate credibility of proposed model
- Observed data-driven approach confirmed deep learning model to be leading model with an accuracy of **99.68%**

PUBLICATIONS

Desai, N. P., **Baluch, M. F.** & Aziz, R. M. (2023). Computer vision model with novel cuckoo search based deep learning approach for classification of fish image. Multimedia Tools and Applications, 1-20.

Baluch, M. F., Patel, S., Aziz, R. M. & Ganie, A. H. (2022). LGBM: a machine learning approach for Ethereum fraud detection. International Journal of Information Technology, 1-11.

Baluch, M. F., Patel, S., Aziz, R. M. & Kumar, P. (2022). A machine learning based approach to detect the Ethereum fraud transactions with limited attributes. Karbala Int. J. Mod. Sci, 8, 139-151.

Desai, N. P., Wadhwani, A., **Baluch, M. F.,** & Mishra, N. (2021, September). A Comparative Assessment Study on Machine Learning Classifiers for Cardiac Arrest Diagnosis and Prediction. In 2021 International Conference on Innovative Computing, Intelligent Communication and Smart Electrical Systems (ICSES) (pp. 1-6). IEEE.

AWARDS

Departmental, University of Windsor - $4,000 Jan 2023
- Awarded for scoring **90%+** in all graduate level courses in Fall 2022 term

Provincial, Ontario Graduate Scholarship - $15,000 Sep 2022
- Awarded **1** out of 4 available awards for international students at University of Windsor with **2500+** students

95th /40,000, National Engineering Olympiad 4.0 Jun 2021

Institutional, VIT Bhopal GVSDP Scholarship - $1,000 Jul 2018

CERTIFICATIONS

Machine Learning: Algorithms in the Real-World, Coursera (Specialization) Aug 2021

Data Management & Visualization, Coursera (Wesleyan University) Jul 2021