

Muhammad Abdullah

MACHINE LEARNING ENGINEER | CERTIFIED NLP SPECIALIST

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SUMMARY:

Experienced Machine Learning Engineer and Certified NLP Specialist with a strong academic background and a deep passion for the fusion of Machine Learning, Deep Learning, and software engineering. Eager to drive innovation in intelligent software systems by combining cutting-edge approaches in Deep Learning and Machine Learning. Demonstrated experience includes software development, Final Year Project (FYP) leadership, and a proven record of academic excellence with summa cum laude graduation.

EXPERIENCE:

1. Software Engineering Intern

10Pearls | July 2022 - August 2022, Karachi, Pakistan

- Utilizing Django and SQLite, designed and developed a web-based automated interview portal with a team of developers.

2. Affiliated Group Lead & ML Engineer (FYP Accelerator Program)

10Pearls | September 2022 - June 2022, Karachi, Pakistan

- Lead my group to create our Final Year Project (FYP) called **VIABUS**.

EDUCATION:

• FAST National University of Computer and Emerging Science | Karachi, Pakistan

Bachelor Of Computer Science | 2023

- Graduated summa cum laude—**3.7+ GPA**

• DJ Sindh Government Science College | Karachi, Pakistan

Pre-Engineering | 2019

- Earned a special cash prize from the government of Sindh for getting **A+ grade** in final board examinations.

PROJECTS:

1. VIABUS - AN INTELLIGENT VOICE ENABLED IDE:

- Developed a voice enabled IDE using Electron JS that will allow users to control the overall environment utilizing vocal and written commands:
 - Integrated Whisper model to allow transcription of vocal commands into textual commands.
 - Fine-tuned BERT model using custom dataset for intent model/ intent classification of textual commands.
 - Fine-tuned DistilBERT model using custom dataset for Named Entity Recognition (NER)/ feature extraction from textual commands.
 - Developed an algorithm using SpaCy's word dependency model for the purpose of negation checking.

2. SALES FORECASTING FOR BIGMART PRODUCTS THROUGH ENSEMBLE LEARNING - EDA AND XGBOOST REGRESSION:

- Developed a predictive model using XGBoostRegressor with GridSearchCV for hyperparameter tuning, to forecast sales for BigMart products. The project involved comprehensive Exploratory Data Analysis (EDA) to uncover insights and patterns in the data, along with the creation of a machine learning pipeline, incorporating feature engineering techniques for improved model accuracy.

3. TELECOM CUSTOMER CHURN PREDICTION WITH ENHANCED EDA AND RANDOM FOREST CLASSIFICATION:

- Predicted telecom customer churn using RandomForestClassifier with GridSearchCV for hyperparameter tuning. Conducted extensive Exploratory Data Analysis and developed an ML pipeline with feature engineering for accurate predictions.

4. CODIO - PERSONAL CODE INTERPRETER:

- Developed an efficient LangChain agent powered by a quantized Llama using a prompt engineering model, enabling it to respond to user inquiries regarding their code with the assistance of the FIASS vector database.

5. LEXO-SEMANTIC SEARCH ENGINE:

- Developed an advanced research papers search engine by combining lexical analysis using TF-IDF sparsity matrices and semantic understanding through Sentence-Transformer (SBERT). Utilizing cosine similarity and a mechanism to handle fuzzy misspelled words, ensured precision in matching query and document embeddings.

6. WHATSAPP CHAT ANALYZER - EXPLORING CONVERSATIONS WITH STREAMLIT:

- Developed a WhatsApp Chat Analyzer using Streamlit for in-depth chat analysis. Conducted Exploratory Data Analysis to gain insights into WhatsApp conversations.

7. MEDICAL INSURANCE COST PREDICTION AND ANALYSIS:

- Developed a predictive model for estimating medical insurance costs using both Linear Regression and Random Forest algorithms, leveraging comprehensive Exploratory Data Analysis (EDA). The project entailed the creation of a robust ML pipeline, incorporating advanced feature engineering techniques to enhance model accuracy and predictive capabilities

TECHNICAL SKILLS:

- Programming languages:** Python, JavaScript, C, C++, C#
- Machine learning:** TensorFlow, Pytorch, Transformers, SpaCy, NLTK, Sentence-Transformers, LangChain, Gensim, sk-learn, FIASS, PineCone, Matplotlib, Seaborn
- Development:** React JS, Electron JS, Django

CERTIFICATIONS:

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|---|--|---------------------------|
| • Deep Learning in Python Track (4 certified courses) | | Datcamp |
| • Natural Language Processing Track (6 certified courses) | | Datcamp |
| • Machine Learning Fundamentals with Python Track (4 certified courses) | | Datcamp |
| • Specialization in Natural Language Processing (3+ months long) | | Deeplearning.ai |
| • Generative AI with Large Language Models | | Deeplearning.ai, Coursera |
| • Natural Language Processing with Sequence Models | | Deeplearning.ai, Coursera |
| • Natural Language Processing with Attention Models | | Deeplearning.ai, Coursera |
| • Supervised Learning with scikit-learn | | Datcamp |

ACHIEVEMENTS:

- Enlisted in the Dean's list of honors for 4 semesters.
- Enlisted in the Rectors list of honors for 3 semester
- Praised by the professor for inventing a new data structure that would provide the combined functionalities of a linked list and an array.