Abdul Rafay

📧 irafayabdul@gmail.com in ⌨ 📞 🧑

Skilled ML/Software Engineer | 5+ years of experience in ML, Data & Software systems | Transforming Data into Intelligence

EXPERIENCE

Softgarden e-recruiting GmbH ⎋   *Saarbrucken, Germany*

MACHINE LEARNING ENGINEER @ Insights & Intelligence   Feb 24 - Present

– Developed an AI-Matching microservice to recommend suitable applicants for job using a BERT-based bi-encoder, fine-tuned on Azure ML and compared its performance with XGBoost as baseline. Improved time-to-shortlist KPI by **20%** .

– Implemented PII Anonymizer tool using MS Presidio with Flair and Spacy models to ensure GDPR compliance in LLM training datasets.

– Designed an internal LLM-based AI-agent with a simple RAG pipeline using Ollama, LangChain.

– Contributing to the development of Modern Data Warehouse using Data Lakehouse architecture with the Medallion pattern, integrating relational & unstructured data sources to eliminate silos. Microsoft Fabric orchestrates workflows using a star schema and data vault.

– Co-designed quarterly OKRs with agile adoption to align product, data & business priorities, enhancing team performance.

Certifications : Machine Learning Engineer with Microsoft Azure ⎋

WORKING STUDENT @ Data Insights   May 22 - Jan 24

– Implemented robust density-based customer segmentation using OPTICS clustering by job title over time.

– Maintained Kafka data pipelines within the existing Relational Data Warehouse, for reliable data transfer from diverse sources.

– Contributed to Customer Health Score model leveraging user behavior data to predict churn and proactively identify at-risk customers.

– Designed KPI dashboards using Dash & Plotly for real-time monitoring of customer health, contributing to a 30% reduction in churn.

– Integrated Job Ad Text Generation & Automated Email Template Creation using OpenAI API and Instruction-based prompting.

– Implemented a statistical Salary Prediction model, providing recruiters with data-driven salary benchmarks for new job postings.

Tools : • FastAPI • Pytorch • Docker • Ollama • LangChain • Weaviate • Git • Kubernetes • ArgoCD • AWS Sagemaker • AKS • Bamboo • Pydantic • Poetry • Pandas • Numpy • MySQL • Jira • Redis • Github Action • Apache Kafka • scikit-learn • MLflow • ONNX • DVC

Technische Universität Dortmund ⎋   *Dortmund, Germany*

RESEARCH ASSISTANT @ Lehrstuhl für Unternehmenslogistik   Jul 21 - Apr 22

– Worked on online optimization and simulation of Matrix-Structured assembly with optimization group at Monash University, Australia.

– Implemented slot block theory in Python and Java.

Tools : • Python • Java • Latex • Anylogic • MiniZinc • Postman • Citavi

Techlogix ⎋   *Lahore, Pakistan*

SOFTWARE ENGINEER @ Financial Industry Solutions   Jun 19 - Apr 21

Oracle Banking Digital Experience

– Extended and Implemented critical enterprise level software product for **Millions** of online banking customers.

– Developed scalable, cost-effective, stand-alone, reusable and secure modules following proper design patterns.

– Implemented **Pakistan's First Voice Assisted Banking** which made a nationwide headline.

– Managed and negotiated with Banking Executives, Cross-functional teams and Third-party service providers.

Tools : • JavaScript • Java • Cordova • SQL • Swagger • Grunt • BurpSuite • JQuery • RequireJs • SASS • ORM • Web-Logic Server • JPA • MVC/MVVM • SOAP • OAM-Server

NOMOR Research GmbH Acquired by Nokia Bell labs in 2020,   *Munich, Germany*

INTERN   Aug 19 - Oct 19

– Migrated technology stack for Dash-IF conformance; an **Open-source software** .

Tools : • Angular • Php • Angular Material

TUKL-NUST Research & Development Center ⎋   *Islamabad, Pakistan*

RESEARCH ASSISTANT   Sep 17 - Jun 19

Top 10 students were selected out of all batches of EE, CS, SE enrolled at the moment.

– Implemented end to end trainable Neural-Networks [CNN, RNN, LSTM].

Tools : • Python • R • Scala • Pytorch • Tensorflow • Keras • Scikit-learn • NumPy • CUDA • OpenCV • VIM

EDUCATION

SAARLAND UNIVERSITY ⬈
M.Sc. in Computer Science

Saarbrucken, Germany
Oct 21 - Jun 24

Quantifying effects of pre-training Language Models on code for Entity State Tracking ⬈

Master Thesis

Many large language models (LLMs) incorporate code in their training but the explicit rationale for including such data remains unmentioned and lacks justification through benchmarking in recent research.
– Presented a fair and holistic evaluation aimed at quantifying the effects of code training, focusing primarily on entity state tracking and also assessing quantitative and logical reasoning tasks.
– Used lm-evaluation-harness framework for experiments considering eleven 4.2B models from Huggingface's datablation suite and fifteen models from the Llama 2 family ranging from 7B, 13B, to 70B.

Relevant Coursework:
– Elements of Machine Learning.
– High Level Computer Vision
– Machine Learning for Language and Vision
– Neural Networks Theory and Implementation*
– Topics in Optimization for Machine Learning
– Architectural Thinking for Intelligent Systems

*Worked as tutor of NNTI, Responsibilities included conducting tutorials, preparing and grading assignments, exam project.

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY, PAKISTAN ⬈
Bachelor of Engineering in Software Engineering

Islamabad, Pakistan
Sep 15 - Jun 19

Short Term Load Forecasting based on Human Behavior

Bachelor Thesis

– Predicted consumption at household level based on human behavior towards the electricity usage in Pakistan.
– Developed an Android app for residents specific data collection, setup load measuring devices with main source and appliances to automatically send data to server using MQTT protocol.
– Used simulation to augment refined data and applied RNN(LSTM) in comparison with other moving-average models.

EXTRA CURRICULAR

– Elected Member at Computer Science Students Representative Council, Saarland University .
  (only 15 out 2500 students from 81 countries are elected in the council)
– Elected as President @ Presidium of Student Wohnheim .
  (awarded with an allowance from Studierendenwerk Saarland)
– President Pakistani Student Association Saarland .
– Recipient of fully-funded internship opportunity in Munich, Germany.
– Recipient of merit-based Scholarship at National University of Science and Technology, Pakistan.

ACADEMIC PROJECTS

Semantic Textual Similarity using Siamese adaptation of LSTM with Transformer Encoder:

– Explored the Siamese adaptation of LSTM with 2 types of attention methods.
– Transformer encoder applies attention over word embedding to create better embedding for LSTM.
– Self-attention was applied to the output of LSTM to encourage it to attend to different parts of a sentence.

Stacked CNNs with a Twist of Explainability:

– Implementation and highlighted the reasons behind the effectiveness of Stacked Neural Network (S-NN) using Layer wise Relevance Propagation technique (LRP).
– Provided visualization of the highlighted features and how the model perceived them while making predictions.
– The network not only improves due to the combination of features but also induces a synergy effect.

Cursive Hand Written text Recognition:

– Implemented a CRNN model using TensorFlow to read cursive handwritten text from envelopes at TUKL-NUST AI research lab.

MOOCS

– Data Architect enrolled ⬈
– LLM Agents MOOC 2024 ⬈
– Advanced LLM Agents MOOC 2025 ⬈
– Angular - The Complete Guide (2020 Edition) ⬈
– Web App Security Testing with Burp Suite ⬈

INTERESTS

– Swimming
– Table Tennis
– Squash
– Fitness
– Traveling
– Horse Riding