Patan Ashraf Ali Khan

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Objective

- Master's student in Data Science at FH Kiel with hands-on experience in AI-driven projects, seeking thesis or working student opportunities to apply machine learning and data analytics in real-world industry settings.

Education

- **Fachhochschule Kiel, Kiel, Germany** Expected Graduation: March 2026
  Master of Science in Data Science
  - **Relevant Coursework:** Machine Learning, Deep Learning, Big Data Analytics, Data Mining
- **Presidency University, Bangalore, India** Aug 2019 – Jun 2023
  Bachelor of Technology in Computer Science *CGPA: 8.61 / 10*

Technical Skills

- **Languages:** Python, SQL, C, HTML, CSS, JavaScript
- **Libraries & Frameworks:** Pandas, NumPy, Scikit-learn, TensorFlow, Keras, PyTorch, OpenCV, Matplotlib, Seaborn, NLTK
- **Cloud & Big Data:** Google Cloud Platform (GCP), AWS, Databricks, Hadoop, Spark
- **Tools & IDEs:** Jupyter Notebook, VS Code, PyCharm, Git, GitHub, Docker, Kubernetes, Eclipse
- **Databases:** MySQL, PostgreSQL, MongoDB
- **Key Competencies:** Machine Learning, Deep Learning, NLP, Time Series Analysis, Generative AI, Data Visualization, Clustering, Sentiment Analysis, Database Management

Professional Experience

- **AI Development Project – Explo GmbH, Kiel, Germany** Sep 2024 – Dec 2024
  In collaboration with FH Kiel
  - **AI-Powered Podcast Automation**: Developed a botcasting system to automate regional news podcast generation using LLMs and TTS models.
  - **LLM Integration**: Scraped articles from Kieler Nachrichten and summarized content using Gemini 1.5 Flash.
  - **Speech Synthesis**: Generated high-quality German audio using Eleven Labs TTS, optimized for clarity and fluency.
  - **Workflow Development**: Built an integrated pipeline for scraping, summarization, TTS, and GUI-based customization.
  - **Collaboration**: Worked closely with academic and industry mentors to align development with podcasting use cases and user needs.
- **Front-End Development Intern – Syskin Technologies, Bangalore, India** Jan 2023 – Jul 2023
  - **UI/UX Design**: Created responsive, user-friendly web interfaces that improved usability and accessibility.
  - **Front-End Development**: Developed dynamic components using HTML, CSS, and JavaScript in cross-functional teams.
  - **Tools and Frameworks**: Worked with Bootstrap and Figma; conducted cross-browser testing to ensure consistency.
  - **Team Collaboration**: Adapted quickly to Agile workflows and contributed effectively in a collaborative development environment.
  - **Version Control**: Used Git for collaborative code management and practiced pull request workflows in a team setting.

Master's Projects

- **Clustering NASA Datasets**: Used K-Means, DBSCAN, and hierarchical clustering to identify patterns and anomalies in NASA mission data. Visualized results using PCA and interpreted clusters to find outliers in telemetry signals.
- **Asteroid Hazard Prediction**: Built and evaluated classification models (Decision Trees, Random Forest, SVM) to detect potentially hazardous asteroids. Achieved high F1-score and ROC-AUC on imbalanced datasets using NASA's public data.
- **Apple Stock Forecasting with Deep Learning**: Developed LSTM and RNN models to forecast stock movement of Apple Inc. based on historical closing prices. Optimized sequence lengths and hyperparameters to reduce RMSE and improve daily trend accuracy.
- **Bitcoin Price Prediction via Sentiment Analysis**: Performed sentiment scoring on crypto news headlines and social media text using NLP techniques. Compared Linear Regression and Random Forest to correlate sentiment polarity with short-term price trends.
- **Community Detection in E-Commerce Graphs**: Applied Louvain and Leiden algorithms to the Amazon co-purchase network to identify product communities. Leveraged centrality scores and rawComm metrics to enhance product recommendation clustering.

Bachelor's Thesis

- **IoT-Based Home Automation System** Feb 2023 – Jun 2023

  Bachelor of Technology in Computer Science *Presidency University, Bangalore*

  - **System Design**: Developed an IoT-based smart home automation system using ESP32 microcontrollers and the Arduino IDE. Enabled remote control of appliances and sensors through Wi-Fi.
  - **Communication Interface**: Integrated Twilio API for WhatsApp-based control and ThingESP API for secure device monitoring and real-time status updates.
  - **Functionality and UI**: Designed a lightweight user interface for device control and scheduling, emphasizing reliability and ease of use.
  - **Impact**: Published the work in a peer-reviewed journal and presented it during the university's final year project symposium.

Other Academic Projects

- **Smart Fish Farming**: Developed a predictive system to identify optimal fish cultivation conditions using Decision Tree and SVM models. Focused on environmental parameter analysis and yield estimation.
- **IoT-Based Rock, Paper, Scissors Game**: Built an interactive game using Arduino Uno and OLED Display. Programmed in Embedded C to detect player moves and display results in real time.
- **Laser Security System**: Designed a low-cost IoT-based intrusion detection system using laser beams and LDR sensors. Triggered alarms and logged breach events via microcontroller-based logic.

Courses & Certifications

- **AWS Cloud Practitioner Essentials (Certified)**: Credentialed by Amazon Web Services; covered cloud concepts, security, and architecture.
- **Big Data Hadoop and Spark Developer – Simplilearn**: Hands-on course focused on HDFS, MapReduce, Spark RDDs, and data processing pipelines.
- **Python for Data Science – Udemy**: Covered Python fundamentals, data wrangling with pandas, and basic ML workflows.
- **Introduction to Cybersecurity – Cisco/NASSCOM FutureSkills**: Covered foundational concepts in cybersecurity, threat modeling, and data protection.

Languages

- **Languages:** English (Fluent), German (Basic – A2), Hindi (Fluent), Urdu (Native)