Vineeth Muraleedharan

Data Analyst | Data Scientist | Clinical & Healthcare Data Analytics

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PROFESSIONAL SUMMARY

Aspiring Data Analyst and Data Scientist with 9+ years of clinical experience in high precision radiation oncology as a Radiation Therapist, now applying quantitative analyses and AI/ML approaches to healthcare data through hands on projects and the Applied Data Science, Machine Learning and AI certification at E&ICT Academy, IIT Guwahati. Proficient in Python, SQL, R, Power BI and Tableau, with project experience building and deploying predictive models, dashboards and data-driven solutions, including Generative AI/Agentic AI pipelines (RAG, LangGraph) as live applications. Founder of VINE Clinical Intelligence (currently in development stage), a healthcare AI startup building data driven tools for radiation oncology. Brings deep familiarity with clinical data, healthcare workflows, large dataset analysis and modeling and multidisciplinary collaboration to healthcare analytics work.

TECHNICAL SKILLS

- **Data Analysis and Visualisation:** Data cleaning, Exploratory Data Analysis (EDA), Key Performance Indicator (KPI) reporting, Power BI, Tableau, Plotly, Matplotlib, Seaborn, Excel, Streamlit dashboards
- **Programming:** Python (pandas, NumPy, scikit-learn, Keras, TensorFlow, PyTorch, XGBoost, SHapley Additive exPlanations (SHAP)), R, SQL, Object-Oriented Programming (OOP)
- **Machine Learning:** Supervised and unsupervised learning, classification, regression, clustering, recommendation systems, feature engineering, hyperparameter tuning, Synthetic Minority Oversampling Technique (SMOTE), model explainability
- **Deep Learning:** Artificial Neural Networks (ANN), Convolutional Neural Networks (CNN), transfer learning (MobileNetV2), Long Short-Term Memory (LSTM), Gated Recurrent Unit (GRU), transformers
- **Generative and Agentic AI:** LangChain, LangGraph, Retrieval-Augmented Generation (RAG), FAISS, ChromaDB, Large Language Model (LLM) APIs, prompt engineering, AI agents
- **MLOps, Cloud and Databases:** Model deployment, Machine Learning Operations (MLOps), Git, GitHub, Streamlit Cloud, FastAPI, cloud computing fundamentals, Azure, ML lifecycle and monitoring, SQL querying, relational databases, data merging and anonymisation
- **Healthcare Domain:** Healthcare and clinical data, radiotherapy planning data, epidemiology, Digital Imaging and Communications in Medicine (DICOM), medical imaging, exposure to HL7/FHIR health data standards

PROFESSIONAL EXPERIENCE

Amrita Institute of Medical Sciences and Research Centre, **Nov 2020 - May 2026**

Kochi, India

Radiation Therapist *Kochi, India*

- Delivered high precision radiotherapy (SBRT, IGRT, IMRT, SRS) on CyberKnife M6, Radixact X9 Tomotherapy and Elekta linear accelerators, working daily with large datasets of 4DCT and DICOM imaging data under strict protocol adherence and data accuracy standards.
- Led a 27-patient CyberKnife prostate SBRT intrafraction motion study, applying quantitative analysis to 6-degree-of-freedom tracking data to inform treatment margin decisions.
- Collaborated daily with oncologists, physicists and senior clinicians across a multidisciplinary team to support treatment planning and research, in an environment that mirrors cross-functional consulting and knowledge-development work.
- Presented clinical research findings at MVR CANCON 2023, Kozhikode.

SELECTED PROJECTS

- **Radiotherapy Patient Dataset Dashboard and EDA:** Power BI, Tableau, Python. Cleaned and analysed a 6-year, 10,000+ record anonymised radiotherapy patient dataset; built a Power BI dashboard (KPI cards, trend indicators, annotated story page) and a full statistical EDA (recurrence rate with Wilson confidence interval, technique-adoption trends, chi-square and Kruskal-Wallis tests. Published on GitHub.
- **Normal Tissue Complication Probability (NTCP) Lung Pneumonitis Risk Predictor:** Python, XGBoost, SHAP, Streamlit. Compared the classical Lyman-Kutcher-Burman (LKB) model with XGBoost on a 500-patient synthetic cohort (test AUC 0.746 vs 0.737), with SHAP explainability; deployed as a live app.

- **AI Resume Screening Assistant:** LangChain, RAG, FAISS, OpenAI API, Streamlit. Matches resumes to job descriptions using embeddings and retrieval; live on Streamlit Cloud.
- **Insurance Claim Processing Agent:** LangGraph, Streamlit. Multi-step agentic workflow for claim processing, deployed live on Streamlit Cloud.
- **Predictive Maintenance Failure Classifier:** Gradient Boosting, SMOTE, Streamlit. Addressed class imbalance and deployed the model as an app, documented in a Model Development Document.
- **Bank Customer Churn Prediction:** Keras ANN, KerasTuner. Improved from a logistic regression baseline to a tuned dropout ANN with 86.40% accuracy.
- **Accident Detection from CCTV Images:** CNN, MobileNetV2. Improved accuracy from 69% with a CNN built from scratch to 92% using transfer learning.
- **COVID-19 Chest X-ray Classifier:** CNN, transfer learning, augmentation, KerasTuner, Streamlit. Built and compared baseline CNN and transfer learning models with class imbalance handling.
- **Machine Learning Mini-Projects:** scikit-learn and SQL: insurance cost and WHO life expectancy regression, dry bean and census income classification, student clustering, anime recommendation system, and Sakila database SQL analysis.

EDUCATION

Amrita Vishwa Vidyapeetham University, Kochi, India **Aug 2016 - Sep 2020**

BSc Medical Radiologic Technology *Kochi, India*

- Thesis: Comparison of Planning Target Volume (PTV) from 3DCT versus 4DCT maximum intensity projection (MIP) in lung SBRT, with an average PTV reduction of about 60% using 4DCT MIP.

CERTIFICATIONS

E&ICT Academy, IIT Guwahati **Dec 2025 - Oct 2026**

Applied Data Science, Machine Learning and AI Certification

- Coursework: Python, R, SQL, statistics, machine learning, deep learning (ANN, CNN, LSTM, GRU, transformers), OOP, cloud computing, MLOps, Power BI, Tableau, Generative AI and Agentic AI (LangChain, RAG, LangGraph).

PROFESSIONAL REGISTRATIONS

- Health and Care Professions Council (HCPC), UK
- Atomic Energy Regulatory Board (AERB) e-Licensing of Radiation Applications (eLORA), India
- Member, Association of Radiation Therapy Technologists of India (ARTTI)
- Member, Indian Society of Radiographers and Technologists (ISRT)