

Anaswar Jayakumar

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Summary

Research data scientist and AI/ML engineer with a multidisciplinary background in applied mathematics, data science, and healthcare AI. Currently implementing a production-grade Agentic AI platform for Ayurvedic clinical knowledge retrieval at Amrita Institute of Advanced Research (AIAR), applying LangGraph multi-agent architectures, prompt engineering, and LLM-as-a-Judge evaluation to advance AI-driven healthcare research. Prior research at Amrita Institute of Medical Sciences (AIMS) applied CNNs to EEG-based epileptic seizure prediction, demonstrating the clinical impact of deep learning in neuroscience. Additional professional experience in large-scale data engineering, public-sector regulatory analytics, and full-stack software development.

Experience

Amrita Institute of Advanced Research (AIAR)

Chicago, United States

Research Data Scientist

January 2026 – Present

- Designed and benchmarked four LangGraph agent architectures (ReAct, Hybrid CodeAct, API CodeAct, Pure CodeAct) across 100 clinical knowledge questions over a 60-patient Triphala RCT and a 446-record Ayurvedic knowledge base — including a no-API Pure CodeAct control that isolated the value of the tool-server APIs (API vs. no-API CodeAct)
- Built a dual-judge LLM-as-a-Judge framework (6-axis weighted LLM rubric + reference-anchored ground-truth judge, 3 runs per pair at temperature 0) and validated the LLM judge at 89–96% exact run-to-run agreement (identical score across all 3 runs) before drawing architecture conclusions.
- Re-architected the agent system — 9-category classifier with exemplar lookup, scoped tool routing, NaN execution guards, and a 12-call tool budget — lifting the LLM-judge mean weighted score across 85 Phase-2 questions from 0.59 to 0.88 (Hybrid CodeAct) and 0.67 to 0.94 (API CodeAct).
- Authored a 15-criterion correctness rubric that, on a 5-KQ validation set, reversed the Hybrid-vs-API ordering the 6-axis rubric had produced (Hybrid 0.949 vs. API 0.913, against 0.921/0.931 prior); diagnosed a uniform-weighting flaw and held the full 100-KQ rerun pending the fix.
- Shipped two reusable Claude Code skills — an architecture-blind correctness judge and a failure root-cause diagnostic — plus a 7-sheet cross-architecture comparison workbook that drove architecture selection

United States Postal Service — Postal Regulatory Commission (PRC)

Washington, DC, United States

Data Analyst

July 2024 – June 2025

- Operated Python Extract, Load Transform (ETL) pipelines to load Service Performance datasets; validated loads via Azure Data Studio SQL checks. Built ETL validation scripts (nulls, type checks, primary-key duplicates) and wrote load logs to streamline refresh audits.
- Maintained Service Performance pipelines end-to-end (ingest → transform → validate → publish): monitored run health, reran failed loads, and documented Standard Operating Procedures to keep refresh cadences on schedule.
- Automated structured/unstructured table extraction with Camelot, boosting capture reliability and reducing preparation time.
- Standardized Camelot pipelines (lattice vs stream modes, fallbacks) to improve robustness across document formats.
- Analyzed Negotiated Service Agreement (NSA) contracts; supported counsel via findings and CHIR responses that strengthened oversight.
- Produced NSA summaries linking contract terms → observed outcomes, guiding regulatory actions.

Amrita Institute of Medical Sciences (AIMS)

Kochi, India

Data Scientist

August 2023 – December 2023

- Led a collaborative study with epilepsy specialists (AIMS/Amrita Tech) advancing deep-learning for seizure prediction; authored a research proposal on predicting epileptogenic zones and improving diagnostic workflows.

- Implemented and trained CNNs on EEG from 25 patients; evaluated accuracy, sensitivity, specificity, F1, AUC, precision; ensured robustness with rigorous train/validation/test splits, fixed seeds, and documented cohort selection.
- Established an EEG preprocessing pipeline (filtering, artifact rejection, windowing, channel alignment) for clean inputs.
- Logged experiments (configs, metrics, confusion matrices) for reproducibility and clinician-friendly review.
- Benchmarked CNNs against classical baselines to validate lifts and map error modes.
- Presented plain-English briefs with risks, failure cases, and next-step experiments.

Cue Health

San Diego, CA

Software Development Engineer I (Full-Stack)

June 2022 – October 2022

- Wrote Java unit tests for FHIR CRUD services, cutting regressions and speeding debugging; added mocking/contract tests for FHIR resources to catch schema drift early and strengthen API contracts.
- Implemented a DoseSpot notification endpoint with dynamic GET params, improving responsiveness and integration.
- Tested APIs with Postman and monitored services with Datadog to diagnose and resolve production issues.
- Built Datadog dashboards/alerts (latency, error rates) and runbooks to accelerate incident response.
- Reviewed API specs for edge cases, status codes, idempotency, aligning product expectations with engineering.
- Contributed to Agile processes and CI checks, documenting fixtures and payloads for faster onboarding.

Technical Skills

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- Data Science & ML: Linear/Logistic Regression, Ridge/Lasso/ElasticNet, Random Forest, XGBoost, CNNs, K-Means, PCA, Hypothesis Testing
 - Data Engineering & Workflows: ETL/ELT pipelines; XBRL→JSON; S3→MySQL loaders; schema & data-dictionary management; automation & validation
 - Programming & Querying: Python (Pandas, scikit-learn, Statsmodels, TensorFlow, Keras), SQL/MySQL, R/RStudio, Java, C++
 - Visualization & Reporting: Tableau, Matplotlib, Seaborn; HTML dashboards with filters, pagination, export
 - Agentic AI & LLMs: LangGraph, LLM-as-a-Judge evaluation, prompt engineering (CoT, tag-weighted), Claude/Anthropic API

Education

Northwestern University

Evanston, IL

Master's in Data Science

January 2021 – June 2022

University of California, Riverside

Riverside, CA

Bachelor of Science, Applied Mathematics

September 2016 – June 2020