

Rut Patel

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EDUCATION

University of Southern California — Master of Science in Computer Science | 1st Sem

Aug. 2025 – Present

Pandit Deendayal Energy University — B.Tech in Information & Communication Technology | GPA: 9.76

May 2025

TECHNICAL SKILLS

Languages: Python, C++, C, C#, SQL, JavaScript

Backend & Frontend: .NET Core, NodeJS, React, AngularJS, Flask, FastAPI

Cloud & DevOps: AWS (Batch, Bedrock, Lambda, S3, CloudFormation), Jenkins, Git, OpenSearch, Docker, REST

Datastores: MongoDB, MySQL, SQLite

ML (supporting): PyTorch, TensorFlow, Keras, Scikit-learn, Hugging Face, LangChain, LlamaIndex

WORK EXPERIENCE

Data Engineer Intern | *Class Valuation, Michigan, USA* | Part Time | Remote

Jan. 2025 – Jul. 2025

- Architected an automated **rule feedback classification pipeline** with AWS Batch + Bedrock, scaling ingestion/processing by **millions** of records weekly while improving maintainability with CloudFormation-managed infrastructure.
- Optimized LLM prompts to curb inference spend by **≈20%** while keeping responses consistent at scale.
- Created **automated AWS infra** (CloudFormation + OpenSearch) with Multi-AZ failover, DNS/ACM integration, and S3 snapshot pipelines - cutting manual operations by **30%** and boosting cluster resilience.
- Provisioned **reproducible environments** and **job definitions** through parameterized CloudFormation templates for safer rollouts.

Software Engineer Intern | *Iolite Softwares, Gujarat, India* | Full Time | On-site

Jan. 2025 – Jun. 2025

- Implemented a **Content Based Image Retrieval System** for trademark/patent logos (**MAP ≈ 0.73**) using shape/texture/color descriptors, and integrated open-weight embeddings to boost retrieval signals.
- Crafted an **LLM-assisted database helper** that replaced 10–15-line SQL snippets with concise natural-language queries.
- Developed **ERP components** (competitor analysis, patent tracking) to centralize legal/IP workflows and reduce swivel-chair effort.

AI & ML Educator | *Mashdemy, Karnataka, India* | Part Time | Remote

May. 2024 – Dec. 2024

- Instructed **ML foundations** (KNN, logistic regression, CNNs) and modern **Hugging Face workflows** with hands-on labs.
- Mentored learners to ship **portfolio projects** (chatbots, text-to-image, music generation) with clean code and version control using GitHub.

Research Intern | *PDEU, Gujarat, India* | Full Time | On-site

May. 2024 – Aug. 2024

- Designed triplanar 2D R2U-Net with attention gates, achieving DSC: **90% (Whole Tumor), 82% (Core), 78% (Enhancing Tumor)** on BraTS 2021 dataset.
- Formulated a novel 3D CNN for survival prediction (**MSE: 86,931; Accuracy: 59.4%**), improving prognosis reliability.
- Authored a **journal paper** (under review) on brain tumor segmentation & survival analysis.

PUBLICATIONS

Patel, R., Rajput, S., Raval, M. S., Kapdi, R. A., Roy, M. (2025). Attention-Gated UNet Model for Semantic Segmentation of Brain Tumors and Feature Extraction for Survival Prognosis. (Under Review).

PROJECTS

Adaptive DQN Framework for Autonomous Gameplay in Dangerous Dave | PyTorch, OpenCV, Selenium Oct. 2024 - Dec. 2024

- Orchestrated a **Deep Q-Network agent** with a custom training environment to learn robust level navigation.
- Employed **OpenCV template** matching for precise event cues driving reward shaping.
- Linked Selenium to **automate** gameplay loops for uninterrupted training cycles.

Real-Time Disaster News Aggregation Platform - SIH | Kafka, AWS, HDBScan, PyTorch, React, NodeJS Aug. 2024 - Oct. 2024

- Assembled a **streaming ingestion layer** over Kafka to consolidate news and tweets in real time.
- Applied HDBSCAN with cosine similarity for clustering/authenticity checks (**96% accuracy**).
- Designed a **React interface** and fused a **BART summarizer** to surface concise, actionable incident views.

ACHIEVEMENTS

Member of the University's Chess Team PDEU, Gujarat, India

IEEE Computation Intelligence Society, Chair PDEU, Gujarat, India

Civic and Social Service Intern Visamo Kids, Gujarat, India

Finalist of the SSIP 2.0 Gujarat Hackathon PDEU, Gujarat, India

Finalist of the Odoo Combat - 2024 Hackathon Gujarat, India

Startup incubated under PDEU Incubation and Innovation Centre PDEU, Gujarat, India