

# SHALABH SINGH YADAV

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## EDUCATION

### Master of Data Science (Applied Machine Learning)

University of Massachusetts, Dartmouth  
GPA: 3.7

North Dartmouth, MA  
Aug 2023 – Dec 2025

**Relevant Coursework:** Advanced Machine Learning, Mathematical Statistics, Database Systems, Data Visualization, Institutional Research

### Bachelor of Computer Science

Acropolis Technical Campus  
GPA: 9.3/10

Indore, India  
Aug 2019 – May 2023

## EXPERIENCE

### Research Assistant – Reinforcement Learning & Agentic AI Systems

University of Massachusetts Dartmouth

Apr 2025 – Present

- Designed and implemented a **Gymnasium-compliant reinforcement learning environment** that decouples environment dynamics from learning algorithms, enabling reproducible experimentation across multiple agent configurations.
- Architected a **plug-and-play RL system** supporting Q-learning, deep RL, heuristics, and Stable-Baselines3, allowing rapid algorithm integration without environment-specific refactoring.
- Formalized **state, action, reward, and termination interfaces** following Gym standards, improving learning stability, interpretability, and consistency across agent implementations.
- Built **agent-agnostic interaction loops** emphasizing autonomous decision-making, staged transitions, and reward-driven optimization, establishing reusable foundations for agentic AI systems.

### Research Assistant – Applied ML & Model Automation (*C-SFRAT*)

Apr 2025 – Aug 2025

- Transformed a GUI-driven reliability modeling workflow into **scalable Python-based CLI pipelines**, enabling systematic experimentation across 7 statistical models and 40+ configurations.
- Implemented configuration-driven validation and fallback logic that significantly improved experiment reliability and setup consistency.
- Conducted structured convergence and sensitivity analyses to understand **model behavior under uncertainty**, strengthening confidence in analytical outcomes.
- Developed automated **reporting and visualization pipelines** producing publication-ready artifacts to accelerate result review and stakeholder communication.

### Founder & Software Engineer – Data Analytics Systems (*Project Demo*)

Jan 2021 – Mar 2023

*R.S. Traders*

- Founded and built an end-to-end **data analytics platform from scratch**, owning system design, data pipelines, and dashboards to replace manual, spreadsheet-driven operations.
- Designed **automated data ingestion and validation workflows** that converted fragmented operational data into reliable analytical datasets supporting repeatable analysis.
- Applied **statistical and predictive modeling techniques** to analyze demand and inventory behavior, improving planning decisions and operational visibility.
- Balanced technical execution with business constraints by iterating directly with users, translating analytical insights into actionable workflows adopted in daily operations.

## PROJECTS

### Customer Behavior Modeling – Applied Machine Learning (*Project*)

Dec 2023 – Feb 2024

- Analyzed behavioral time-series data using **R and statistical methods** to identify engagement drivers and retention patterns across user cohorts.
- Modeled relationships between activity levels and health indicators to support interpretable, hypothesis-driven analysis of user behavior.

## SKILLS

- Machine Learning & AI:** Reinforcement Learning, Agentic AI Systems, Deep RL Concepts, Supervised & Unsupervised Learning, Statistical Modeling, Optimization
- ML Engineering & Experimentation:** Gymnasium Environments, Experiment Design, Model Evaluation, Algorithm Benchmarking, Reproducible Pipelines
- Programming & Data:** Python, R, SQL, Pandas, NumPy, Scikit-learn, Matplotlib
- Tooling & Visualization:** Git, CLI Workflows, Tableau, Power BI, Excel