

# Sarath Chandra Karri

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## Education

### Virginia Commonwealth University

Master of Science, Decision Analytics and Data Science

Richmond, VA

Jan 2024 – Dec 2025

## Experience

### Virginia Commonwealth University – Convergence Lab Initiative

Image Processing Engineer

June 2025 – Present

Richmond, VA

- Implemented facial recognition and facial expression recognition models to enhance secure and adaptive system responses.
- Designed data workflows integrating YOLO-based object detection and multi-source data fusion for low-light environments.
- Developed Video Anomaly Detection using rule-based logic for abandoned bag detection and pickpocketing in crowded zones.
- Applied convolutional autoencoder models for quick movement anomalies and integrated results into HMI for real-time awareness.
- Added hand sign recognition for general and military gestures using a CNN to expand non-verbal communication within HMI.
- Processed model performance data in SQL, reducing troubleshooting time by 30% by resolving the data pipeline bottlenecks.
- Developed a Streamlit dashboard to visualize system metrics and outputs for Technical and Non Technical stakeholders.

### Virginia Commonwealth University – Chemical and Lifescience Engineering

Data Science Intern

Jan 2025 – Aug 2025

Richmond, VA

- Built a batch-based web scraping pipeline using Python's BeautifulSoup frameworks reducing manual data collection time.
- Extracted structured data, including price and supplier information, from over 6.3 million MCULE compound listings.
- Designed a data processing framework that splits massive workloads into 50 manageable batches for memory efficiency.
- Designed Power BI dashboards to visualize pricing, purity, and product trends, enabling more strategic decisions.
- Added fail-safe mechanisms like data flushing and structured error handling to guarantee reliability during long-term runs.

### Virginia Commonwealth University – Department of Information Systems

Graduate research Assistant

Jan 2024 – May 2025

Richmond, VA

- Worked on an ONR funded project to analyze the navy sailors behaviors that negatively impact operational readiness.
- Conducted research to prevent sailors destructive behaviors which include suicide and substance abuse.
- Studied how traditional models link destructive behavior to individual failures rather than systemic control issues.
- Used the Systems Theoretic Accident Model and Process (STAMP) to analyze destructive behavior.
- Studied the navy's operational framework to identify system components contributing to its safe and effective functioning.
- Analyzed and documented feedback loops of navy's system components to identify potential vulnerabilities.
- Mapped system processes using Agile and Lean methodologies, identifying critical improvement opportunities.
- Developed a new organizational command structure with control actions and feedback loops to identify system issues.
- Identified gaps from non-mandatory reporters, continuity issues from safety personnel turnover, and tailored strategic needs.

## Skills

**Programming:** Python, R, SQL, JavaScript, Bash, Git, HTML, CSS

**Tools:** Excel, Tableau, Power BI, Jupyter, VS Code, AWS, HIVE, SPARK, GCP

**Core Skills:** Machine Learning, Predictive Modeling, Statistics, Optimization, Dashboard Building

**Soft Skills:** Problem-Solving, Critical Thinking, Communication, Detail-Focus, Teamwork

## Projects

### CUSTOMER CHURN PREDICTION | Python, Datamining, Machine Learning

- Conducted extensive Exploratory Data Analysis (EDA) on a telecom dataset (7K+ records, 20+ features).
- Engineered features and performed data preprocessing, utilizing standardscaler and one hot encoder.
- Developed a comprehensive classification pipeline using 70/30 train-test splits, evaluating model performance with accuracy.
- Trained five classification models including KNN, DT, RF, and LR, with the (SVM) achieving the highest accuracy of 79.13%.

### REVIEW SENTIMENT CLASSIFICATION MODEL | Python, Datamining, Machine Learning

- Developed a binary sentiment classifier leveraging over 568K Amazon product reviews to predict customer sentiment.
- Converted ratings from 1–5 stars into binary labels, explicitly removing neutral (3-star) reviews to enhance classifier accuracy.
- Applied data preprocessing, including text cleaning, lemmatization, and numerical vectorization (Bag-of-Words).
- Accuracies of decision tree and random forest classifiers are 92% and 93% respectively for predicting sentiment.

### CREDIT RISK ANALYSIS & PREDICTION | Scikit-Learn, Machine Learning, Python, Datamining

- Performed EDA, identifying key factors for loan approval such as Person Age, Income, Credit History and Employment Length.
- Built an interactive dashboard for real-time loan data exploration, improving decision-making efficiency.
- Engineered numerical and categorical features with standardization and encoding to prepare clean, model-ready data.
- Trained and evaluated Logistic Regression, SVM, and Random Forest models, achieving 92% accuracy with Random Forest.

### LICENSE PLATE RECOGNITION (LPR) | YOLOv8, EasyOCR

- Developed a real-time license plate recognition system integrating YOLOv8 for object detection and EasyOCR for text extraction.
- Fine-tuned YOLOv8 on the CCPD dataset to detect plates with high precision across diverse lighting and angles.
- Optimized live webcam inference using downscaled frames, selective OCR, and Apple MPS acceleration—achieving smooth real-time performance on macOS.
- Delivered a lightweight, end-to-end LPR solution capable of reading multiple license plates simultaneously with minimal lag.