

Charvi Kusuma

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EDUCATION

University at Buffalo, The State University of New York

Aug 2023 - Feb 2025

MS, Computer Science and Engineering; GPA: 3.96/4.0 (AI/ML Track)

Teaching Assistant - Data Intensive Computing (Machine Learning, Hadoop, MapReduce, Spark) for Fall 2024

Vellore Institute of Technology

Jul 2019 - Jun 2023

Bachelor of Technology, Computer Science; GPA: 9.58/10.0

Honored with Chancellor's Gold Medal for best outgoing student and Academic Excellence Award for securing 2nd rank. [Link](#), [Link](#)

EXPERIENCE

Amazon Development Center

Jan - Jun 2023

Software Development and Operations Intern - [Certificate](#)

Bangalore, India

- Developed and rectified 120+ integration test cases, ensuring CI/CD and reducing weekly 30 hours of manual effort.
- Mitigated 20 security risks & built pipeline with bulk action scripts (Python), enhancing data protection for future instances.
- Onboarded 3000+ user permission sets to AWS Secrets Manager with Lambda functions and automated workflows.

JP Morgan Chase & Co.

Jun - Jul 2022

Software Engineering Intern - [Certificate](#)

Hyderabad, India

- Delivered 85% effective remodeling POC for migrating from Splunk to Grafana, reducing 60+ hours of integration time.
- Devised backend solution in Java to redirect 3 service requests, using metric monitoring tools (Prometheus, Elasticsearch).
- Illustrated 5 customized visualizations on Grafana to validate migration, ensuring accurate retrieval of previous requests.

Nanyang Technological University (NTU)

Jan - Jun 2022

Research Intern, guided by Prof. Erik Cambria - [Certificate](#), [Github](#)

Remote

- Analyzed 25K+ tweets on Immigration Reforms, providing error analysis and performance improvements for [SenticNet APIs](#).
- Identified changes in APIs comparing 3 NLP tools (TextBlob, VADER, Gensim) for concept parsing and polarity of sentiments.
- Implemented Semantic Similarity Analysis using unsupervised ML solution, improving the policy strategy for 2 APIs.

SKILLS

Programming Python, Java, SQL, JavaScript, HTML, CSS, R, C/C++

Tools Git, GitHub, Docker, AWS, Postgres, MYSQL

Libraries PyTorch, Scikit-learn, TensorFlow, Keras, SpaCy, Word2Vec, NLTK, OpenAI Gym

Frameworks Flask, Flutter, React, Node.js, Material-UI, Bootstrap, Streamlit

Courses Deep Learning, Reinforcement Learning, Natural Language Processing, Computer Vision, Algorithms, DBMS

People Skills Active Listening, Cooperative Mindset, Curious to optimize, Insist on high-quality, Strategic Initiative

PROJECTS

F.E.A.S.T - Food & Ingredient AI Suggestion Technology

Jan - May 2024

Integrated Ingredient Object Detection & Customized Recipe Generation with Nutritional Insights

[Github](#)

- Tokenized 2.2M recipes to fine-tune BERT and ChefTransformerT5 models, assessed 70% fluency with BLEU metrics.
- Annotated 100 ingredients dataset with Grounding DINO and trained YOLOv7/v9 models, resulting in 0.8mAP score.

RxRovers: Roaming for Rapid Relief

Feb - May 2024

Simulated Medicine Delivery with Path Optimization and Dynamic Obstacle Avoidance.

[Github](#)

- Solved Multi-Agent problem with 6 Deep RL algorithms, comparing Value Based, Actor Critic and PPO.
- Improved policy for stochastic environments, achieving 95% target success with tuned rewards and hyperparameters.

Optimized Transformers for Precise Data Insights

Feb - Apr 2024

Autoencoders and Transformer for advanced anomaly detection & text classification

[Github](#)

- Achieved 91.76% text classification accuracy in transformers, applying regularization techniques for robustness.
- Strengthened anomaly detection for Apple Inc.'s Twitter data by experimenting with 5 methods through Autoencoders.

CrimsonEye: Predictive Crime Analysis

Sep - Dec 2023

Mapping Crime Dynamics - Spatial, Temporal and Textual Perspectives | **Ongoing Research**

[Github](#)

- Applied 14 ML classifiers, 7 clustering algorithms with optimized model training, topic modeling and LSTM.
- Presented end-to-end solution in Flask framework on [CSE Demo Day](#), selected among 150+ projects.

PUBLICATIONS

Automated Monitoring System for Healthier Aquaculture Farming | ACCAI 2023

[IEEE Link](#)

Implemented reliable model for UAV surveillance, experimented in local fish farm with 90% detection rate.

Attention based Discrimination of Mycoplasma Pneumonia | ICCIDE 2021

[Springer Link](#)

Differentiated Mycoplasma Pneumonia with 81% accuracy, comparing transfer learning techniques.

Journey of Letters to Vectors through Neural Networks | ICDAM 2021

[Springer Link](#)

Evaluated 4 architectures and variations for text vectorization and image captioning.

A Traffic Control System | Patent 2023

[Link](#)

Designed traffic clearance strategy by prioritizing waiting time for 5 different users.

System And Method To Extract And Analyze Textual Features From An Image | Patent 2023

[Link](#)

Proposed textual feature extractor with Grey-level Co-occurrence Matrix (GLCM), highlighting 75 claims.

Snake Detector and Alerting Gadget for Rural India Using Yolo | Patent 2022

[Link](#)

Incorporated YOLO with IoT devices for 2x faster object localization and instant alerting at 52.8 FPS.

Python Based Motion Sensing Digital Writing Pad | Patent 2021

[Link](#)

Developed motion-sensing digital writing pad with Python and OpenCV.