

# Charvi Kusuma

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## EDUCATION

### University at Buffalo, The State University of New York

Aug 2023 - Jan 2025

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

NY, USA

**Graduate Student Assistant** - Collaborated with 200+ students, providing resources and mentorship in Data Intensive Computing projects on machine learning and big data frameworks (Hadoop, MapReduce, Spark) for Fall 2024.

### Vellore Institute of Technology

Jul 2019 - Jun 2023

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

AP, India

## ACHIEVEMENTS

2023 Chancellor's Gold Medal: Honored as the Best Outgoing Student among 1500+ Graduating Students - [Link](#)

2022 & 2021 Academic Excellence Award: Consecutively secured 2nd rank among BTech CSE students - [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.
- Automated workflows, collaborating with cross-functional teams to onboard 3000+ permission sets to AWS Secrets Manager.

### 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, Advisor 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

<b>Programming</b>	Python, Java, SQL, JavaScript, HTML, CSS, R,
<b>Tools</b>	Git/GitHub, CUDA, Docker, AWS, Postgres, MYSQL
<b>Frameworks/Libs</b>	Hadoop, MapReduce, PyTorch, TensorFlow, Keras, PySpark, Flask, Flutter, React, Node.js
<b>Courses</b>	Machine Learning, Deep Learning, Computer Vision, Natural Language Processing, Algorithms, Databases
<b>People Skills</b>	Cooperative and Growth Mindset, Curious to optimize, Insist on high-quality, Strategic Initiative

## PROJECTS

### PIC-LoRA: Pedestrian Intention Classification

Jun - Sep 2024

Low Rank Adaptation Technique on Pedestrian Object detection & Intention Classification

Ongoing Research

- Reduced trainable parameters to 0.68% of ViT backbone with 94% classification accuracy for 4 intention adapters.
- Processed 346 HD video clips from JAAD Dataset, extracted Region of interests (ROIs) with YOLOv8 as pedestrian detector.

### 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, annotated 100 ingredients with Zero-Shot detector and fine-tuned BERT and ChefTransformerT5.
- Achieved 70% fluency (BLEU) and presented an end-to-end solution, selected from 150+ projects at [CSE Demo Day](#).

### 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

Analyzed textual, temporal, and spatial data for a holistic view of crime dynamics

[Github](#)

- Designed 21 ML crime hotspot prediction models, incorporating LDA for topic modeling and LSTM for temporal analysis.
- Presented the end to end solution using Flask framework on [CSE Demo Day](#), selected among 90 projects.

PUBLICATIONS

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<b>Mapping Crime Dynamics: Integrating Textual, Spatial, and Temporal Perspectives   UEMCON 2024</b> <i>Applied LSTM model and 7 clustering algorithms for informed crime prevention strategies.</i>	<a href="#">IEEE Link</a>
<b>Automated Monitoring System for Healthier Aquaculture Farming   ACCAI 2023</b> <i>Implemented reliable deep model for UAV surveillance, experimented in local fish farm with 90% detection rate.</i>	<a href="#">IEEE Link</a>
<b>Attention based Discrimination of Mycoplasma Pneumonia   ICCIDE 2021</b> <i>Differentiated Mycoplasma Pneumonia with 81% accuracy, comparing transfer learning techniques.</i>	<a href="#">Springer Link</a>
<b>Journey of Letters to Vectors through Neural Networks   ICDAM 2021</b> <i>Evaluated 4 architectures and variations for text vectorization and image captioning.</i>	<a href="#">Springer Link</a>
<b>Snake Detector and Alerting Gadget for Rural India Using YOLO   Patent 2022</b> <i>Incorporated YOLO with IoT devices for 2x faster object localization and instant alerting at 52.8 FPS.</i>	<a href="#">Link</a>
<b>Python Based Motion Sensing Digital Writing Pad   Patent 2021</b> <i>Developed motion-sensing digital writing pad with Python and OpenCV.</i>	<a href="#">Link</a>