

# KUKKALA VAISHNAVI

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## PROFESSIONAL SUMMARY

I am a Master's student in Data Science with 4+ years of combined industry and academic research experience. I possess proficiency in programming languages such as Python, C#, Java, as well as expertise in statistical modeling and SQL. My academic contributions include research on brain tumor analysis in the medical sector, segmentation to accurately detect the contours of a weld bead on depth-intensity images in the 3D vision manufacturing industry, the development of a plagiarism detection model, and various projects spanning data science, computer vision, and electronics and communication engineering. I am eager to apply cutting-edge machine learning and data science techniques to address complex challenges, particularly in the medical and manufacturing sectors. I am actively seeking opportunities to transform academic research into impactful, real-world solutions in dynamic, data-driven environments.

### CORE COMPETENCIES:

#### Data Science & Machine Learning:

▪ Statistical Analysis ▪ Predictive Modeling ▪ Hyperparameter Tuning ▪ Model Optimization  
▪ LLM Eval ▪ Supervised & Unsupervised Learning ▪ Deep Learning ▪ Reinforcement Learning  
▪ Data Science Pipelines ▪ NLP ▪ RAG pipelines ▪ Generative AI

#### Programming & Tools:

▪ Python ▪ C# ▪ Java ▪ C ▪ .Net/.Net Core ▪ SQL ▪ Ansys HFSS ▪ HTML ▪ Pytorch  
▪ TensorFlow ▪ Spark ▪ Hugging Face ▪ Git ▪ Linux ▪ OpenCV ▪ MATLAB

#### Data Engineering & Visualization:

▪ Apache Spark ▪ MySQL ▪ MongoDB ▪ REST APIs ▪ Excel ▪ Power BI ▪ Canva

#### Cloud Platforms & MLOps:

▪ AWS ▪ Azure ML, Azure DevOps ▪ Git, GitHub ▪ Model Deployment ▪ CI/CD for ML systems

#### Data & AI Product Management:

▪ Business Planning ▪ Product Lifecycle Management ▪ Cross-functional Collaboration ▪ Agile & Scrum  
▪ Strategic Thinking ▪ Technical Documentation, Data-Driven Decision-Making, Research & Development  
▪ Problem Solving, Continuous Learning & Innovation

## EDUCATION

Tagliatela College of Engineering, University of New Haven ▪ West Haven, CT

May - 2025

*Master of Science in Data Science*

### ▪ Coursework:

▪ Machine Learning ▪ Computer vision ▪ Power BI ▪ Deep Learning ▪ Natural Language Processing (NLP) ▪ Leadership in Data & AI Products ▪ Artificial Intelligence ▪ etc.

### ▪ Research Assistant at SERVO ROBOT INC

Feb 2025 – May 2025

▪ Worked on the research project with Servo Robot in collaboration with the University of New Haven.  
▪ Led a team of 5 on a deep learning-based 3D Vision Welding system, focusing on seam detection optimization using Computer Vision and Pytorch. Designed and implemented an end-to-end custom Attention U-Net model. Conducted rigorous evaluation using metrics such as IoU, accuracy, BCE + Dice loss function with coefficient tuning to improve segmentation performance. Applied various augmentations, hyperparameter tuning & finetuning to enhance model robustness. Worked with University faculty and Industry partners to iteratively test, refine and validate the model on diverse datasets, maintaining data confidentiality and ensuring model reliability.

### ▪ Research Assistant:

Aug 2024 – May 2025

▪ Research on Brain Tumors: Contributed to the Medical industry, conducting research on Brain Tumor using advanced statistical methods and machine learning, deep learning techniques. Collaborated on innovative findings in MRI's and tumors in brain, co-authored paper on data enhancing and data modelling. Assisted in developing research methodologies and analyzing large datasets. Developed a deep learning pipeline using CNN Xception, achieving an impressive 98% accuracy for tumor classification. Integrated ML classifiers (SVM, RF, DT, KNN, LR) after deep feature extraction, yielding 99.91% accuracy.

### ▪ Teaching Assistant:

Jan 2025 - May 2025

▪ Machine Learning: Assisted in teaching courses on Machine Learning, guiding students in topics such as statistical modeling, machine learning, and coding best practices. Providing individualized feedback to enhance student's understanding of algorithms and improve coding efficiency. Supported course material preparation, graded assignments & exams and led group discussions.

Tagliatela College of Engineering, University of New Haven ▪ West Haven, Connecticut, USA

*Master's in data science* ▪ *Dean's Scholarship* ▪ Awarded 1st Place at the Graduate Student Showcase 2025 ▪ Awarded at CAIA Research Symposium for my research contributions in AI.

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**Vardhaman College of Engineering, Jawaharlal Nehru Technological University ▪ Hyderabad, Telangana, India**

*Electronics and Communication Engineering ▪ Telangana ePASS Scholarship ▪ National Means cum Merit Scholarship*

▪ Vardhaman Student Satellite Mission Objective Contest - Issued by IEEE MTT CHAPTER, Jul 2019

▪ Appreciation certificate from Vardhaman College of Engineering for winning 1<sup>st</sup> price in “VERVE-The Project Expo 2022”

## PROFESSIONAL EXPERIENCE

**Ecolab Digital Center ▪ Bengaluru, Karnataka, India**

Jul 2022–Jul 2023

*Associate Software Engineer, RK and DAAS*

- Successfully migrated a vital Data Egress module for RK customers, overseeing the project and seamlessly transitioning all customers to the new solution with OIP.
- Proactively learned OSI PI technology, efficiently addressing resource gaps and swiftly handling all related requests.
- Identified solutions and swiftly facilitated onboarding for successful outcomes upon the arrival of the PI resource.
- Contributed to ECOLAB3D, a cloud-driven digital platform designed to gather data from Ecolab's process control systems, IoT-enabled monitoring solutions, and other integrated systems. The platform generates real-time alerts, streamlines plant operations, and provides performance benchmarking across multiple company locations.
- The technologies utilized include the .NET Framework, Azure Event Hubs, Azure Service Bus, Function Apps, Web Jobs, Table Storage, Azure SQL, Blob Storage, Cosmos DB, and Angular.

**Cognizant ▪ Hyderabad, Telangana, India**

Feb 2022–Jul 2022

*Programmer Analyst, Automation Testing, Java, QA*

- Developed software modules using Java, contributing to a 20% improvement in application reliability.
- Participated in code reviews and pair programming sessions, enhancing code quality and team collaboration.
- Gained proficiency in Agile methodologies by actively participating in sprint planning, daily stand-ups.
- Tested internal products and web pages for functional and UI quality using Selenium, Java, and SQL.
- Ensured adherence to quality standards through comprehensive testing across various aspects.

## DATA & AI PROJECTS

**Brain Tumor Detection with Deep Feature Extraction using Xception Network and Ensemble Machine Learning Classifiers ▪ West Haven, Connecticut**

Aug 2024– March 2025

*Team Leader, University of New Haven/Data Science/Capstone & Research Project*

- Developed a hybrid brain tumor classification pipeline combining deep feature extraction using a fine-tuned Xception CNN and traditional ML classifiers (SVM, RF, DT, KNN, LR), achieving up to 99.91% accuracy with SVM on an independent test set.
- Validated model generalization by training on a small MRI dataset and evaluating on a significantly larger, unseen dataset (3,000+ images), achieving 94.67% test accuracy, confirming robustness and minimal overfitting.
- Optimized computational efficiency by decoupling feature extraction and classification, enabling deployment-ready performance in resource-constrained clinical settings using modular, interpretable architecture.

**Plagiarism Detection using Transformers ▪ West Haven, Connecticut**

Oct 2024– Dec 2024

*Team Leader, University of New Haven/Data Science/NLP*

- Plagiarism detection is a significant challenge in academic and professional contexts. This project leverages cutting-edge transformer-based models to accurately detect plagiarized content, including verbatim copying, paraphrasing, and semantic rewording.
- Key models evaluated include BERT, RoBERTa, T5, and a BERT+LSTM hybrid, trained and fine-tuned on plagiarism-specific datasets.
- Best Overall Model: BERT, achieving 85.87% accuracy and 85.90% F1 scores on both datasets (MRPC and SNLI).

**OBJECT DETECTION USING YOLOv5s ▪ West Haven, Connecticut**

Aug 2024– Dec 2024

*Team Leader, University of New Haven/Data Science/Deep Learning*

- The objective of this project is to fine-tune a YOLOv5 object detection model to detect and classify two specific object categories (Trees, Lights) in a custom dataset.
- YOLOv5's architecture allows for faster training and inference times, making it highly suitable for detecting multiple objects in diverse scenes with limited data. Post training, we achieved 65.8% precision, 69.6% recall, [mAP@0.5](#) was 67.1%, [mAP@0.5:95](#) was 32.3%.

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- The dataset was manually collected at the University of New Haven.

## Weather Classification using Deep Learning

Sep 2024 – Dec 2024

*Team Leader, University of New Haven/Data Science/Deep Learning*

- Classify weather conditions into 5 classes: Rainy, Sunrise, Cloudy, Foggy and Shine.
- Initially built a custom CNN with 3 convolutional layers. Performed optimization & hyperparameter tuning. Achieved 94% accuracy.
- Performed transfer learning with a pre-trained model ResNet18 and achieved 96% test accuracy and 94% validation accuracy.

## Analyzing Trending YouTube Videos using AWS

Mar 2024 – Apr 2024

*University of New Haven/Data Science/Distributed and Scalable Systems*

- We used the data from YouTube data API and made use of AWS cloud services to create an ecosystem for analyzing YouTube videos.
- Developed a personalized content recommendations based on individual viewer preferences and viewing history to improve retention.
- Incorporated sentiment analysis techniques to analyze viewer comments and feedback.

## Email spam detection using Machine learning algorithms

Aug 2023 – Dec 2023

*Team Leader/ University of New Haven/Data Science*

- Data was collected from Kaggle that contains 5572 records of 2 columns “message, category”.
- Compared various ML techniques like Logistic regression, Decision tree, KNN, Random Forest, Stacking model.
- Stacked model (STACK) was a strong performer across multiple metrics, including 98.5% accuracy, 98.7%precision, 99.5%recall, and 99.1% F1 score.

## PUBLICATIONS

- K. V. Reddy, S. Chilukuri and Y. Pandurangaiah, "Miniaturized Planar Dual Band Monopole UWB Antenna using Capacitively Loaded Loop Resonator with Notch Characteristics," 2022 *IEEE Wireless Antenna and Microwave Symposium (WAMS)*, Rourkela, India, 2022, pp. 1-6, doi: 10.1109/WAMS54719.2022.9847921.
- Ongoing paper publication on “Brain Tumor Detection with Deep Feature Extraction using Xception Network and Ensemble Machine Learning Classifiers”

## PROFESSIONAL CERTIFICATIONS & MEMBERSHIPS

Computer Vision course	<i>ineuron.ai</i>	01-01-2025
Python for Data Science	<i>IBM</i>	May 2023
AI, ML, IIoT	<i>National Instruments and Cognibot</i>	May 2020 – Jun 2020
Microsoft Azure Fundamentals	<i>Microsoft</i>	Oct 2022
Relational Database Design	<i>Udemy</i>	Mar 2022
Web Design HTML5 + CSS3	<i>Udemy</i>	Feb 2022
Python Programming for Everybody	<i>Coursera</i>	Apr 2020
Design thinking for Innovation	<i>Coursera</i>	Apr 2020
Treasurer	<i>IEEE Microwave theory &amp; techniques society</i>	Jan 2021 – Present
Event coordinator	<i>IEEE Circuits and systems society</i>	Dec 2019–Dec 2020
Member	<i>University Space Engineering Consortium (UNISEC)</i>	Jan 2020 – Dec 2020
RF and Antenna design using ANSYS HFSS	<i>Entuple Technologies</i>	May 2020 – May 2020
Geospatial Inputs for Enabling Master Plan Formation	<i>Indian Institute of Remote Sensing (IIRS)</i>	Jul 2020 – Jul 2020
Design and Analysis of Advanced Antenna Systems	<i>Vardhaman College of Engineering</i>	Aug 2021 – Aug 2021