VIJAY KRISHNA R V

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Vijaxstark

Summary

Machine learning engineer with a strong foundation in applied ML, deep learning, and computer vision. Experienced in building models for prediction, image segmentation, and real-time detection across varied problem statements. Currently exploring multi-modal AI, with an interest in developing systems that can interpret and connect information across text, images, and structured data.

Experience

Science and Humanities Dept, IIITDM Kancheepuram, Research Intern — Dec 2023 – present

- Built regression-based models to predict creep life of nickel-based superalloys using compositional and microstructural features , results published at **CICT 2024**.
- Currently designing an inverse materials discovery pipeline using conditional GANs, aiming to generate alloy compositions that satisfy specific creep resistance targets.

AUV Society, IIITDM, Team Lead — July 2022 – June 2024

- Led a 22 member team (Team Saaral) in building an autonomous underwater vehicle (AUV) from the ground up, managing integration of mechanical, electrical, and computer vision systems.
- Designed core mechanical components including watertight housings and modular frame layouts; developed real-time object detection pipelines using YOLO for underwater navigation and task automation.
- Participated as finalists in SAUVC 2024, presenting a fully functional AUV at an international robotics competition.

AMTDC, IIT Madras, Research Intern — May 2023 – July 2023

- Developed a time synchronization system using Raspberry Pi and Precision Time Protocol (PTP) to improve coordination in industrial and robotic applications.

Education

B.Tech IIITDM Kancheepuram, Mechanical Engineering — Chennai, India
Aug 2021 – May 2025

- CGPA 8.78/10
- Minor in Machine Learning

Publications

Creep Life Prediction for Superalloys using Gradient Boosting Decision Trees — Dec 2024
Vijay Krishna R V , Khushbu Dash , R J Vikram , Nachiketa Mishra
CICT 2024, IIIT Allahabad
- Built and evaluated multiple **regression models** for predicting **creep life** of superalloys; **gradient boosting decision trees (GBDT)** outperformed other methods in terms of accuracy and generalization

Biomimetic Seasnail Soft Robot for Underwater Exploration (Accepted) — Mar 2025
Vijay Krishna R V , Srikrishnan Srinivasan
International Symposium on Underwater Technology (UT 2025), Taiwan
- Proposed a **soft robotic** platform integrating **YOLOv11**-based object detection for underwater trash identification

Skills

Programming: Python, C++, HTML, Javascript

ML & Deep Learning: PyTorch, TensorFlow, scikit-learn, NumPy, Pandas ,OpenCV , MediaPipe, YOLO, U-Net

Tools & Frameworks: Git,SQL, Docker, FastAPI, W&B

Projects

Deepfake Detection using CNN, ViT, and XceptionNet

Built a deep learning pipeline to classify real vs. fake video frames using ResNet-50, Vision Transformer (ViT), and XceptionNet; achieved **97.8%** accuracy with AUC-ROC of **0.9978** using face-centric preprocessing with MTCNN and advanced image augmentation techniques.

Brain Tumor Segmentation using U-Net

Developed a U-Net-based deep learning model for brain tumor segmentation from MRI scans. Implemented custom data generators, augmentation, and Dice loss to handle class imbalance; achieved a Dice coefficient of **0.87** and IoU of **0.80** on the validation set.

News Summarization using BART

Fine-tuned a BART transformer model on the ILSUM dataset to generate abstractive summaries from long-form news articles; achieved ROUGE-1: **50.18**, ROUGE-2: **37.73**, and ROUGE-L: **45.38** on the test set.

Real-Time Pose Classification with MediaPipe

Developed a system that classifies human poses in real time using MediaPipe, enabling gesture-triggered virtual assistant actions.

BMI and Gender Estimation using Swin Transformer V2 and ResNet-50

Built a multi-task prediction system using facial images to estimate BMI and gender, leveraging Swin Transformer V2 and ResNet-50. Achieved an R2 score of **0.91** and Pearson correlation > **0.92** for BMI prediction, with extensive preprocessing including face cropping, augmentation, and normalization.

Document Parsing with LayoutLMv3

Fine-tuned LayoutLMv3 on the FUNSD dataset for token classification in document understanding. Integrated PyTorch Lightning and W&B for training and logging; achieved an F1-score of **84.6%** and validation accuracy of **89.2%** with bounding-box level visualization and structured field tagging.

Relevant Courses

- Pattern Recognition, Artificial Intelligence, Deep Learning, Data Science, Computer Vision, Data Structures and Algorithms

Certifications

- Machine Learning and Deep Learning Specialization – Coursera
- Introduction to LLMs - NPTEL
- Deep Learning for Computer Vision- NPTEL
- Advanced Financial Analytics - NPTEL

Competitions

- 2nd Place, Push & Router Tracks – Unfold 2023 Web3 Hackathon: Built “Coinvo,” a decentralized chat app with crypto payments and token-gated group access using the Polygon blockchain.
- Finalists – SAUVC 2024 (Team Saaral), Singapore: Designed and deployed an autonomous underwater vehicle (AUV); led vision and systems architecture for international robotics competition.
- Global Finalists (3rd Worldwide) – MATE ROV Virtual Challenge: Contributed to simulation design, testing pipelines, and control systems for autonomous underwater robotics.
- Top 100 Finalist – Create the Future Design Contest (Tech Briefs, USA): Proposed a hybrid AUV-ROV platform for underwater exploration and aquaculture monitoring.