Prasad Adhiyaman

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Education

University of Massachusetts, Amherst — Amherst, Massachusetts
Masters in Computer Science (CGPA: 3.8/4.0) — *Expected Graduation year: 2025*

- Coursework
  - COMPSCI 611: Advanced Algorithms
  - COMPSCI 682: Neural Networks: Modern Intro
  - COMPSCI 520: Theory and Practice of Software Engineering

Vellore Institute of Technology — Chennai, Tamilnadu
BTech in Computer Science with Specialization in AI ML (CGPA: 3.71/4.0) — *Jul 2019 - Jun 2023*

Experience

Software Developer Intern — Oct 2023 - Present
The National Center for Technology and Dispute Resolution — *University of Massachusetts, Amherst*

- Developed a Flutter app called Kapok to enhance resource coordination during natural calamities
- Implemented secure user authentication systems by creating Login and Signup pages, resulting in a user-friendly and secure experience for app users.
- Integrated Firebase for seamless synchronization and real time updates which boosted the performance by 28%
- Successfully optimized app performance, reducing load times by 15% and enhancing overall responsiveness.

Software Development Intern — Aug 2022 - January 2023
Brand Blitz Event Management Pvt LTD — *Chennai, Tamil Nadu*

- Designed and developed a python-hosted website that facilitates scanning business cards of event attendees and creating ID cards.
- Formulated the front-end using HTML, CSS, Javascript to take an image input from the user and made use of Ajax to connect to the back-end for data scanning.
- Implemented the back-end using Flask and used EasyOCR module to scan the text in the image of the business cards and utilized Regex to parse and collect the data.
- Centralized the collected data across multiple systems by leveraging PyGsheets to store all the details in google sheets, allowing the event organizers to keep track of all the attendees effortlessly.
- Improved the overall experience of event attendees and organizers through the website by 63%.

Computer Vision Intern — Jan 2022 - Jun 2022
HCL Technologies LTD — *Chennai, Tamil Nadu*

- Developed and deployed a sophisticated computer vision and machine learning pipeline to a robotic arm, automating the accurate segregation of good and damaged machinery parts using machine learning algorithms
- Pioneered an innovative data augmentation technique, empowering a 97% reduction in data collection time by seamlessly generating a rich dataset of 581 images from only 12 original images.
- Tested the accuracy of 11 machine learning models across 5 cross-folds and attaining a mean accuracy of 97.87%.
- Measured the change in accuracy by increasing the number of defective parts from 12 up to 168 defective parts.
- Engineered a 2-way 4-shot learning model using a custom architecture that classifies the images based on the dissimilarity between the good parts and the defective parts, the model garnered a F1-score of 0.95

Teaching Assistant — January 2022 - April 2022
School of Computer Science and Engineering — *Vellore Institute of Technology*

- Mentored a group of 22 sophomore students who undertook the Machine Learning Essentials course using lectures.
- Cultivated interest in the subject by facilitating peer-peer learning and interactive learning for a whole duration of 18 hours.

Research Intern — Jun 2021 - Jul 2021
Vellore Institute of Technology — *Chennai, Tamil Nadu*

- Formulated a fully connected neural network to predict the rate of Alzheimer's disease in the brain using 2D-MRI images, the accuracy of the model was significantly boosted to 94.45% with the use of oversampling.
- Strategized a highly efficient method for precise hippocampus segmentation from various 3D-MRI images, resulting in an 87% reduction in prediction time while concurrently achieving a 21% enhancement in accuracy
- Conserved the training time by almost 50% by using only half of the dataset for training, without compromising model performance.

Projects

Monet Art Generation using Cycle GANs Sep 2023 - Dec 2023

- Customized a generator and discriminator architectures for a Cycle GAN to generate Monet Art from scenic images
- Boosted the image styles by incorporating an Encoder-Decoder architecture to the Generator
- Attained a Fretchet Inception Distance of 8.137 between the original image and the generated image

Patient Tracker | *Python, Flask, HTML, CSS, Javascript, Bootstrap, MongoDB, Git* Sept 2023 - Dec 2023

- Implemented a user-friendly interface allowing patients to access and book appointments with multiple doctors based on real-time availability, resulting in a 25% increase in appointment scheduling efficiency.
- Implemented a Python Flask backend to handle data processing and interaction with the MongoDB database, ensuring efficient and scalable data storage.
- Engineered a comprehensive system to compile and display patients' historical visit data, including vital signs such as BP, sugar, and oxygen saturation.
- Conducted regular code reviews and optimizations using Git, resulting in a 15% improvement in performance.

Obstacle Detection and Avoidance using YOLOv7 and Mask RCNN Ensemble Sep 2022 - Apr 2023

- Curated the dataset containing 512 images with 924 annotations across 10 classes using dash cam videos
- Outpaced the accuracy of Mask-RCNN and YOLOv7 by proposing an ensemble between the two algorithms that increased the mean average precision by 20% and the mean intersection union by 16% in the testing dataset
- Outperformed research works in KAIST dataset by 18% and INRIA dataset by 7% in terms of mAP and mIoU.
- Fabricated an obstacle avoidance system using a fuzzy logic, that was capable of handling 87.6% of the test cases

Youtube channel performance analysis | *Python, HTML, CSS, Javascript, Flask, Plotly* Jan 2022 - June 2022

- Engineered a python hosted website that analysis the performance of Youtube channels which helps investors to find the right content creators to sponsor and promote their products.
- Facilitated the User to enter the name of the channel and leveraged the Youtube API to collect the Likes, views and comments.
- Established dynamic graphics and plots using Plotly to represent the increase or decrease in likes and views

Machine learning for operator graph optimization in semantic web databases Sep 2021 - Jun 2022

- Formulized a reinforcement algorithm tailored for efficient SPARQL join query optimization targeting N-Triples data
- Maximized the number of good query plans by up to an 80% for SP2B synthetic data and achieved 50% improvement for WordNet real-time data.

Candidate shortlisting using resume | *Python, HTML, Bootstrap, JQuery, Ajax, SQL* Jan 2021 - June 2021

- Programmed a flask website that facilitates recruiters to upload a job description for a job posting and select suitable candidates based on the similarity score generated between the candidate's resume and job description.
- Implemented both the candidate user interface and the recruiter user interface using HTML, CSS, Bootstrap, and Jquery. Strengthened the website using Ajax to create fast and dynamic web pages.
- Centralized the information of the candidate using SQL and stored the resumes using WerkZeug in the file systems

Medical Bot | *Python, HTML, Bootstrap, Ajax, BeautifulSoup, Speech_Recognition* Jan 2021 - June 2021

- Developed a python-hosted website that diagnosis medical issues through the description of issues via speech.
- Leveraged the Speech_recognition module in python to recognize sentences from speech signals and translating them to text
- Implemented and trained a chatbot to process detected text and respond with a meta data for the system to process.
- Web scraped the internet based on the meta data using the chrome driver and beautifulsoup to generate diagnosis on the disease.

Detection of Parkinson's using Spiral/Wave test | *HTML,Javascript,Bootstrap,Flask* Jan 2021 - June 2021

- Designed a python-hosted website that detects the presence of parkinson's using an image of a spiral or wave drawn by the user.
- Developed the front-end using HTML, CSS, Javascript and Bootstrap to allow the user to choose and upload a spiral or a wave.
- Trained a random forests model to classify between Normal and Parkinson's patients in both spiral and wave images.
- Implemented the back-end using Flask and incorporated the random forest model for the detection of Parkinsons's and returned the detected results to the user.
- Designed a webpage that advised users detected with Parkinson's on their next steps to prevent further complications and designed a webpage that advised users detected as Normal on how to prevent Parkinson's.

Publications

Hippocampus Segmentation based Alzheimer's disease Diagnosis and Classification of MRI images: Arabian Journal of Science and Engineering, Impact Factor: 2.807, Authors: Dr.Balasundaram, Mr. Prasad Adhiyaman, Miss. Sruthi Srinivasan, Mr. Ayush Kumar, and Mr. Jahan Malik, Accepted: 12th December 2022, Published: 03rd January 2023

Conference Presentations

A Detailed Study on Obstacle Detection and Avoidance Techniques for On-road Vehicles: International Conference on Computer, Power and Communications, Sri Sairam Institute of Technology, Authors: Dr.Balasundaram, Mr.Prasad Adhiyaman,15th December 2022, Chennai, Tamil Nadu, India

IOT In Medical Systems – A Review: International Conference on Advanced Communication, Control and Computing Technologies, SIMATS School of Engineering, Authors: Dr.Sivakumar, Mr.Prasad Adhiyaman, Mr. Akash Sivakumar, 28th June 2022, Chennai, Tamil Nadu, India

Industry 4.0 Inspired Automation for Anomaly Detection in Machinery Parts using Machine Learning: International Conference on Internet of Things , SRM Institute of Science and Technology, Authors: Dr.Balasundaram, Mr.Prasad Adhiyaman, Miss.Sruthi Srinivasan, Mr.Vedang Sawakar, 7th April 2022, Chennai, Tamil Nadu, India

Volunteering

Volunteer Aug 2022 - Jan 2023

Volunteer for India *Chennai, Tamilnadu, India*

- Spearheaded the "I Contribute" campaign by eradicating 22 pounds of trash at Edward Elliot Beach, Chennai
- Reduced the time of creating certificates for volunteers by 83% using Canva automate maker and Mergo
- Amplified the "Daan Utsav" campaign by achieving almost 2 hours of volunteer hours using the VFI Instagram Filter Challenge

Honors and Awards

Project Based learning award: for the project "Obstacle Detection in Indian Roads using YOLOv3" April 2023

Best paper award: ICIoT conference at SRM Institute of Science and Technology, Chennai April 2022

Certificate of Merit: for excellence in Insight C++ Programming, TCS May 2018

Technical Skills

Languages: Python, C, C++, Java, HTML, CSS, Javascript, Bootstrap, PHP, JQuery, Flutter, Dart, MATLAB
Libraries: Flask,BeautifulSoup, Pandas, NumPy, Matplotlib, Pytorch, Tensorflow, Scikit-learn, OpenCV, Pillow
Frameworks: Node.js, ReactJs, Ajax, Plotly
Databases: SQL, MongoDB, XML, SPARQL
AI Expertise: Machine learning, Deep Learning, Computer Vision, Few Shot learning, Transfer Learning

Certifications

Apply Generative Adversarial Networks: Coursera	**Dec 2021**
Build Basic Generative Adversarial Networks: Coursera	**Dec 2021**
Build Better Generative Adversarial Networks: Coursera	**Dec 2021**
Fine Tune BERT for Text Classification with TensorFlow: Coursera	**Dec 2021**
AI for Medical Treatment: Coursera	**Sep 2021**
AI for Medical Diagnosis: Coursera	**Sep 2021**
AI for Medical Prognosis: Coursera	**Dec 2021**
HTML and CSS: Udemy	**Aug 2021**
Learn Ethical Hacking From Scratch: Udemy	**Aug 2021**
Neural Networks and Deep learning: Coursera	**Jul 2021**
Introduction to Packet Tracer: Cisco Networking Academy	**Oct 2020**