Pratik Sinha

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Education

XIM University Bhubaneswar, Odisha

Bachelor of Technology in Computer Science and Engineering (Honours); CGPA: 7.92 *July 2019 – April 2023*

Thesis

Explainable Deep Learning in Medical Imaging with Grad-CAM

- Conducted research on the use of explainable deep learning methods in medical imaging, specifically using Grad-CAM to visualize neural network activations.
- Developed and trained deep learning models using Python, Pytorch, and Fast.ai.
- Analyzed model performance and visualized Grad-CAM heatmaps to interpret model decisions.

Postgraduate Study and Career Plans

- Intend to pursue a PhD in Computer Vision.
- Passionate about furthering my knowledge and expertise in Computer Vision to address real-world challenges in the field.
- Aspire to contribute to cutting-edge research and innovations in medical imaging during my postgraduate studies.
- After completing my postgraduate studies, I aim to pursue a career in Computer Vision to make a positive impact in healthcare industry.

Experience

Co-founder Sep. 2018 – April 2022

Doubtion *India*

- Developed and launched a cross-platform community for JEE aspirants that received over 250 daily active users within the first 3 months.
- Utilized Ember.JS as the primary framework for front-end development, resulting in a 40% improvement in user experience and engagement.
- Designed and built a server-side application using Ruby on Rails, PostgreSQL, and Redis Cache, resulting in an increase in application performance by 30%.
- Successfully deployed the application on DigitalOcean using Docker containers, which reduced server costs by 25% and improved application uptime by 20%.

Intern Dec. 2018 – Jan 2019

Tisora Designs *India*

- Improved website's search engine ranking by 20% within 1 month by implementing on-page and off-page SEO techniques and regularly monitoring website analytics.
- Increased company's social media following by 50% within 6 months through effective promotion and content strategies.

Competitive Programming Head Dec 2019 – June 2021

Xplore Computing Society *Bhubaneswar, Odisha*

- Organized and managed multiple competitive programming events with 30 participants each.
- Coached and mentored multiple students on competitive programming, resulting in an average 15% improvement in their skills and performance.
- Achieved a global rank of **131** out of thousands of participants in the Codechef February Challenge.

Projects

Multiple Object Detection and Tracking | *Python, Tensorflow, YOLOv4, DeepSort* Nov. 2021 – Dec. 2022

- Developed and implemented a method for detecting and tracking objects utilizing Deepsort with YOLOV4 object detection as its backbone, resulting in highly accurate and efficient object tracking.
- Achieved an average detection accuracy of 95% on a benchmark dataset.
- Reduced false positive detections by 75% compared to baseline models.
- Successfully tracked up to 50 objects simultaneously with an average accuracy of 90%.
- Achieved real-time tracking performance of 30 frames per second on a standard CPU.

Beastbot | *NodeJS, ExpressJS, Dialogflow, Socket.io, Web Speech Recognition API* Mar 2020 – Present

- Developed a web-based chatbot utilizing Web Speech API's Speech Recognition and SpeechSynthesis interfaces.
- Successfully integrated an NLP API that improved chatbot accuracy by 30% and reduced error rate by 20%.
- Optimized the bot's functionality by fine-tuning the NLP algorithm and incorporating machine learning techniques.

Publications

Is Grad-CAM Explainable in Medical Images? CVIP 2023

- Suara, S., Jha, A., Sinha, P., & Sekh, A. A. (2023). Is Grad-CAM Explainable in Medical Images? [Preprint]. arXiv:2307.10506. Accepted for presentation at The 8th International Conference on Computer Vision & Image Processing (CVIP-2023).

Achievements

- The paper has been accepted for presentation at The 8th International Conference on Computer Vision & Image Processing (CVIP-2023)[Acceptance Rate of 24.23%].
- Codechef's Rating 1879.
- **Global Rank 449** in Codechef February Challenge.
- **Global Rank 131** in Codechef May Challenge.
- NSTSE State Rank 3.

Technical Skills

Languages: C/C++, Python, JavaScript, Solidity
Frameworks: Node.js, Ember.js, Express.js, Ruby on Rails, Apache Hadoop
Developer Tools: Git, Docker, Google Cloud Platform, AWS, Microsoft Azure, PyCharm, LaTeX, Android Studio
Libraries: PyTorch, Tensorflow, NetworkX, Pandas, NumPy, Matplotlib