SATVIK VIRMANI

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Experience

MeitY, Government of India   August, 2024 - Present
Research Fellow
- Working on the "*Crop Health Monitoring and **Yield Prediction using Deep Learning** with Drone Imagery*" project.
- Developing and optimizing **deep learning models** to analyze high-resolution drone imagery for **real-time monitoring** of crop health and accurate yield prediction.
- Utilizing advanced **image processing** techniques and **neural networks** to automate the interpretation of large-scale drone data.

Birlasoft - CK Birla Group   June, 2024 - July, 2024
System Administrator Intern
- Engaged in **system administrative tasks**, streamlining identification, tracking, and resolution of incidents.
- Implemented robust change management processes to minimize service disruptions.

Education

National Institute of Technology, Kurukshetra   November, 2022 - Present
B.Tech - Computer Engineering (CGPA: *9.34*)

Indian Public School, Jagadhri   April, 2020 - March, 2022
Senior Secondary Education (Grade: *94%*)

Projects

Generation of Rooftop Solar Energy Potential Map Using Deep Learning (Link)
Flask | NumPy | PyTorch | NextJS
- Developed a geospatial web based portal for estimating the power that can be generated using solar energy based on the size of civilian housing rooftops. The system allows users to choose an area and based on this, determine how much solar energy can be generated at building level using existing solar radiation related satellite data.
- Built an **U-Net** model to detect building footprints from satellite images.
- Used **PyTorch** for building **neural network** models, **Flask** for backend, **NextJS** for frontend, and **ShadCN** for UI components.

Relevant String Cluster Search Algorithm (AI-Cluster-Search) (Link)
Tensorflow | Pytorch | K-NN | Transformers |Flask
- Developed an **API-based system** for searching and sorting text documents by relevance using **advanced natural language processing techniques**.
- Implemented **tokenization with transformers**, leveraging **TensorFlow** and **PyTorch** for **embedding generation**. Utilized **k-NN for clustering** documents and applied **cosine similarity** to rank search results based on relevance.
- Enabled dynamic addition of new documents to the search pool, improving search efficiency over large datasets.

LegalEase - A centralized legal service provider platform (Link)
NextJS | PostgreSQL | Tailwind
- Developed a centralized legal service provider platform which seeks to organize the legal service sector by offering a centralized marketplace where advocates, arbitrators, and document writers can efficiently offer their services.
- Used **NextJS** for frontend and backend APIs, used **PostgreSQL** as database and **ShadCN** for UI components.

Skills

Programming Languages: C • Python • Java • JavaScript
Data Science and Analysis: Python • Statistics • Jupyter • Matplotlib • Seaborn • Matplotlib
Machine Learning & AI: NumPy • Pandas • PyTorch • Tensorflow • Scipy • Neural Networks
Web Development: Next JS • React JS • Flask • FastAPI • Javascript • Tailwind CSS • UI/UX Design • CSS • HTML
Database Systems: MySQL • PostgreSQL • MongoDB
Cloud Technologies: Firebase • Google Cloud Development
CourseWork: Operating System • Data Structures • Design & Analysis of Algorithms • OOPs • Databases • Internet of Things (IoT) • Discrete Mathematics • Computer Networks • AI & Soft Computing
Soft Skills: Leadership • Project Management • Problem-Solving • Critical thinking • Time Management

Volunteering

Break.The.Ice   October, 2023 - Present
Content Creator
- Contributing to a youth-led non-profit dedicated to tackling societal taboos and shaping a better world through effective communication and strategic social media engagement.

Technobyte - Techno-Managerial Society of Computer Engineering   September, 2023 – present
- Member of Media and Tech team, External Participation (EP) team

Anamika - Cultural Society   September, 2023 - present
- Co-Head of Design Team and member of Hindi and sponsorship team

National Service Scheme (NSS)   December, 2022 - January, 2024
Community Volunteer
- Actively contributed to social services and community projects, developing leadership skills and collaborating with diverse teams.

Achievements

- Gained **national-level recognition** for my innovative solution, "Shoe Providing Hearing and Visibility Assistance for Blind People" at the Indian Young Innovator and Inventor Challenge (IYIIC), showcasing advancements in assistive technology for the visually impaired.
- Received a **Reliance Foundation Scholarship** for undergraduate studies, awarded on merit, with additional networking opportunities through a strong alumni network.
- **Led the team** that was the runner-up in the "**Productathon**" competition at NIT Kurukshetra E-Summit 2023 for the project "Seekh," which offered decision-making assistance and guidance on stock market technical analysis.
- Secured 1st Runner-Up position in the IIT Bombay I-Hack Open Coding Challenge.
- **Awarded Certificate of Achievement** for serving as Campus Executive Intern for the Entrepreneurship Cell, IIT Bombay, for the year 2023-24, recognizing dedication and efforts in supporting and promoting entrepreneurship.