

Striving towards improving accessibility by building scalable solutions in the vision-language domain using Deep Learning, Computer Vision and Natural Language Processing.

## RESEARCH INTERESTS

Natural Language Processing, Computer Vision, Quality Diversity, Evolutionary Algorithms, Augmented Reality, Visual Reasoning

## EXPERIENCE

### ICAROS Lab, USC

Voluntary Researcher

May 2022 - Present

Los Angeles

- Designed and executed experiments to train Quality Diversity Algorithms with customized reward signals in 4 reinforcement learning environments.
- Explored performance of 5 QD algorithms in difficult to explore environment like "Slime Volley"
- Analyzed impact of 3 standard QD algorithms for Racetrack Navigation track task using the "CarRacing" environment.

### Locomotor Control Lab, USC

Voluntary Researcher

Jan 2022 - Present

Los Angeles

- Enhanced VR Game developed to improved skilled locomotion for individuals with neurological impairments.
- Enabled enhanced analysis by randomizing all object locations with 0% loss of experiment repeatability.
- Introduced functionality to store additional user action data to analyze user responses at multiple granularities.

### METRANS Transportation Center, USC Sol Price School of Public Policy

Student Worker (Researcher)

Jan 2022 - Present

Los Angeles

- Added features to the METRANS student website to increase student engagement on the website by 10%.
- Developed 3 game scenes for a game using Unity to educate kids about public transportation in LA County.

### Textify AI

Natural Language Processing Intern

Nov 2021- Dec 2021

Remote

- Optimized generative pre-trained (GPT-NEO) NLP model to auto-generate Natural language content for academic research proposals.
- Developed synonym suggestion enhancements to improve user sentence acceptance by 14.7%.

### Dassault Systèmes Solutions Lab

Software Engineering Specialist

June 2019-Jul 2021

Pune, India

- Designed Revamped UI for the Lifecycle Management Service in the CI / CD Pipeline for the 3DEXPERIENCE platform to increase service usage across organization by approx 63%.
- Full Stack Developer for the proprietary CI / CD Pipeline for the 3DEXPERIENCE platform.
- Designed a prototype using NLP and Machine Learning to recommend QA testing scenarios using software requirements specification documents.
- Promoted to Software Engineering Specialist from R & D Development Associate position.

### Tata Consultancy Services Research and Innovation

Research Intern

Dec 2018-Apr 2019

New Delhi, India

- Created Novel Metric to analyze Temporal Coherence of labels placed in videos for AR Applications.
- Introduced optical flow to give upto 50x Temporal Coherence improvement for the labels placed in the videos.
- Co-authored "SmartOverlays" published in WACV 2020.

## PUBLICATIONS

- **SmartOverlays: A Visual Saliency Driven Label Placement for Intelligent Human-Computer Interfaces**  
IEEE Winter Conference on Applications of Computer Vision (WACV).  
Authors: Srinidhi Hegde, Jitendra Maurya, Aniruddha Kalkar, Ramya Hebbalaguppe

## PROJECTS

### Multi-Teacher Knowledge Distillation for Visual Question Answering Systems

Jan 2022-May 2022

- Designed a light-weight model for VQA systems using ALBEF and VisualBERT as teachers in a multi-teacher setup.
- Model size reduction up to 65x and upto 8x inference speed increase as compared to the teacher models.

### UI Template Image to Code Generation

Aug 2018-Apr 2019

- Constructed a template UI code generating system from input screenshots or photos of GUIs
- Reduced code writing time by average 23.4 mins per web page.

### Face sketch To Photo-Realistic Image Generation

Jan 2018-Jun 2018

- Spearheaded the creation of system to generate photo-realistic images from hand-drawn face sketches as well as predict age groups of people from sketches
- Achieved 77.65 % similarity with original image and 87.38% accuracy for age group prediction.

### Toxic Comment Classification

Jan 2018-Feb 2018

- Analysis and Classification of social media comments into 6 different levels of toxicity
- Applied Recurrent Neural Networks to classify Word embeddings from social media comments .

### Driver Distraction Detection

Aug 2017-Dec 2017

- Designed and created a driver distraction recognition and notification program based on a live video capture
- Attained 91.08% accuracy for the 10 pre-determined distractions.

## LEADERSHIP AND INVOLVEMENT

### Personality Advancement Circle of Engineers, Walchand College of Engineering

May 2018 - Dec 2018

Chief Program Director of Publicity

Sangli, India

- Managed a team of 5 people in-charge of publicity in the engineering colleges in Sangli, India.
- Member of the organizing committee for 3 events with 100+ participants from 5 different colleges across Sangli, India.
- Organized 5+ events in Walchand to improve the communication skills for upcoming engineers.

### New Pune Gymkhana

May 2013 - Jul 2021

Sports Coach

Pune, India

- Managed workload for coaches at the club for 50 kids in the age range of 8 to 16.
- Trained coaches to teach the basics of various Gymnastics, Yoga and Strengthening activities.
- Trained Professional Mallakhamb players from the age groups of 10 to 16.

## EDUCATION

Master of Science, Computer Science (Artificial Intelligence), University of Southern California

Aug 2021-May 2023

GPA: 3.47 / 4.0

Bachelor of Technology, Computer Science and Engineering, Walchand College of Engineering

Aug 2015-May 2019

GPA: 8.79 / 10.00

## TECHNICAL SKILLS

### Languages

Python, javascript, C/C++, Java, ASP.Net, HTML

### Libraries & Frameworks

TensorFlow, Pytorch, TFLearn, OpenCV, Keras, pymongo, NLTK, scikit-learn, matplotlib, Flask, Django

### Databases

MySQL, MongoDB

### Others

CSS, Computer Vision, Natural Language Processing, Data Visualization, Game Development

## HONORS AND AWARDS

2018 Smart India Hackathon ( **Finalist** )

2018 AWS Deep Learning Hackathon IIT Madras ( **Finalist** )

2017 IIT Bombay's E-yantra ( **Semi-Finalist** )