AILNENI RAKSHITHA

Data scientist
Halliburton Development Center

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Education

Degree	Institution	CPI/%	Year
M.Tech	IIT Gandhinagar	9.00	2019-2021
B.Tech	VNIT NAGPUR	7.79	2015-2019
Class XII	Sri Chaitanya Junior College	98.3	2013-2015
Class X	Alphores High School	9.8	2012-2013

Industrial Experience

- **Data scientist, Halliburton Development center**   **[Aug 2021-present]**
  1. Worked with wide variety of customers on AI/ML projects in US, Latin America, Nigeria, and India.
  2. **ESP Failure Prediction:** There are two parts: Early detection and Imminent failure detection. For early detection, auto-regression (with LSTM) is used with inputs such as intake temperature, discharge pressure, motor temperature, and current values at previous timesteps to predict the value of current in the future. In the case of imminent failure detection, unsupervised learning approach (Isolation forest) is leveraged to detect anomaly points in a day.

- **Explore and recommend IOT techniques in Electrical Engineering, Reliance Industries**   **[May-July 2018]**
  1. Analyzed the plant structure and designed an outline for condition monitoring and preventive maintenance of transformer using RFID/NFC detection.
  2. Worked on predictive maintenance of motor using dynamic time warping.
  3. Proposed several ideas such as smart dust sensor to increase the productivity of the plant.

Publications

1. Ailneni Rakshitha Rao. ASRtrans at SemEval-2022 Task 4: Ensemble of Tuned Transformer-based Models for PCL Detection. In Proceedings of the 16th International Workshop on Semantic Evaluation (SemEval-2022), pages 344–351, Seattle, United States. Association for Computational Linguistics.

2. Ailneni Rakshitha Rao and Arjun Rao. ASRtrans at SemEval-2022 Task 5: Transformer-based Models for Meme Classification. In Proceedings of the 16th International Workshop on Semantic Evaluation (SemEval-2022), pages 597–604, Seattle, United States. Association for Computational Linguistics.

Research Projects

- **Generative Adversarial Networks for the generation of Microscopic data:**   **[May 2020-June 2021]**
  Advised by Dr. Ravi Hegde
  1. Implemented baseline image translation model (Pix2pix) for the generation of label-specific microscopic images from binary masks.
  2. Generated 3D images from the corresponding z-slices using 2D networks. The resulting images are evaluated using Haralick textural features.
  3. Proposed 'modified StarGAN' framework to improve the textural range of the generated images.

- **NLP Contribution Graph:**   **[Aug 2020-Dec 2020]**
  Advised by Dr. Mayank Singh

1. Built a knowledge graph with the contributions from NLP research papers. It is integrable within other knowledge graph infrastructures such as ORKG.
2. Classified sentences in a research paper into contribution and non-contribution categories by using an LSTM model in the first part. Then, scientific entities and relational cue phrases are extracted from contribution sentences.
3. Triples in the form of subject-predicate-object are formed from contribution sentences and subsequently classified into different information units' such as model, baseline, dataset etc.

- **Frequency-tuned Salient Region Detection:**   **[May-July 2020]**

  Advised by Dr. Shanmuganathan Raman

  1. Extracted the saliency map of an image by calculating the L_2 norm between mean value pixel in LAB format and the Gaussian filtered image. Compared fixed and adaptive thresholds that are applied on the mean shift segmented image.

- **DRDO SASE's UAV Fleet Challenge:**   **[Oct-Dec 2019]**

  1. The aim was to detect a green colored box located on a 40 x 30 field with the help of a swarm of drones in minimum time. We assembled and integrated drones with *Pixhawk* flight controllers, cameras, Raspberry pi and GPS. The drone was automated using *QGround Control* software.
  2. For object detection, we trained and deployed Yolo V3 model and established connection between the three drones.

- **To build a prototype of self-driving car using convolutional neural networks (CNN) and Image processing techniques:**   **[Jan-April 2019]**

  1. *Using Image processing:* In this approach, the real-time image is processed and image processing techniques such as thresholding, centroid detection, etc. are applied to detect the lane and predict trajectory.
  2. *Learning based approach:* Using open source machine learning libraries, the system is trained on a manually curated dataset, so that it is capable of identifying and extracting lanes in real-time from an unseen environment.
  3. The output of the above two approaches is converted into steering angle which is given to a RC car to follow a lane in real-time.

Teaching

- TA for Advanced Numerical Methods in Engineering (MA 602), IIT Gandhinagar.
- TA for Intro to Data Science (CS 328), IIT Gandhinagar.
- RA for Electrical and Electronics lab (ES 105), IIT Gandhinagar.

Service

- Reviewer for SemEval 2022.
- Volunteer at Climate Mind.

Achievements

- Secured Distinction in AUSTRAILIAN CHEMISTRY in 10TH Standard.
- Centre first in 'ASSOCIATION FOR IMPROVEMENT OF MATHS EDUCATION' Exam.
- Received "Prathiba Puraskar" in 21st 'NATIONAL LEVEL MATHS COMPETITION'.
- Received gold medal in 'UNIFIED COUNCIL'.

- District level Table tennis player.

Skill Summary

- **Tools and programming:** Python, Pytorch, Tensorflow, Git, LaTeX, HTML/CSS, C, Shell Scripting, JavaScript, MATLAB.
- **Communication:** Telugu (Native), English (Proficient), Hindi (Proficient), French (Beginner).