Sajid Javid

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RESEARCH INTERESTS

Machine Learning, Deep Learning, Computer Vision, Natural Language Processing and Wireless Communication.

EDUCATION

IIIT Delhi: 2024 – Present
Ph.D. in Computer Science and Engineering – **current CPI: 9.33** (out of 10)

Zakir Hussain College of Engineering and Technology, Aligarh Muslim University: 2020 – 2024
B. Tech. Computer Engineering – **CPI: 8.9** (out of 10)

Candid Higher Secondary School: Jan 2019 – Dec 2019
12th Standard – **Percentage: 92.8%** (464/500)

IEI High School: Jan 2017 – Dec 2017
10th Standard – **Percentage: 92.1%** (461/500)

TEACHING ASSISTANTSHIP

- Artificial Intelligence — *Aug 2024 – Dec 2024*
- Data Structure and Algorithm — *Jan 2025 – May 2025*

RESEARCH EXPERIENCE

1. **S. Javid**, S. Ghose, A. Dwivedi and S. Sarkar, "Trans-REM: A Two Agent CNN-Transformer Based Approach for Indoor Radio Environment Mapping," accepted in *2025 IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC).*

2. M. Swaned, **S. Javid**, S. Humaney, A. Sachan, N. S. Chauhan, and N. Kumar. (2024). **Enhancing Traffic Management Through Advanced Vehicle Detection for Congestion Prevention**. *2024 IEEE 21st International Conference on Mobile Ad-Hoc and Smart Systems (MASS)*, pp.623–628. (link)
   - Investigation of urban traffic congestion issues and inefficiencies in traditional traffic management systems.
   - Utilization of YOLOv8s deep learning models for real-time vehicle detection, analyzing performance across vehicle types such as cars, two-wheelers, autos, buses, and trucks.
   - Performance evaluation highlighting 80% precision for cars, with a mean average precision (mAP@0.5) of 85.8%, and areas for improvement with other vehicle classes using data augmentation techniques.
   - Discussion on the integration of vehicle detection systems with adaptive traffic light control for enhanced traffic flow and urban safety.

3. **S. Javid**, M. Saim, and S. Islam. (2024). **Efficiency Redefined: The Document Scanner App for Precise Entity Identification with Customized NER**. *2024 3rd Edition of IEEE Delhi Section Flagship Conference (DELCON).*(link)
   - Developed a specialized Named Entity Recognizer (NER) to precisely identify entities in scanned documents using Computer Vision and NLP technologies
   - Achieved remarkable NER model accuracy (NER P 99.80, NER R 99.53, NER F 99.66).
   - Designed a user-friendly Document Scanner Web App for efficient document processing and data privacy, reflecting a blend of innovation and practicality.

4. A. Singh, and **S. Javid**. (2023). **Spatio-Temporal Data Analysis using Deep Learning**. *International Research Journal of Engineering and Technology (IRJET)10(8), pp.219–225.* (link)
   - Analytics of the ability of deep learning to learn complex relationships between the spatial and temporal dimensions of the data.
   - Evaluation of various deep learning methods applied to tasks in the field of spatio-temporal analytics, such as transportation, social media events, environmental concerns, human mobility, action recognition, and other related areas.

INTERNSHIPS (link)

1. Google Research ExploreCSR Intern - IIT Roorkee (Got 2nd Position in Paper Poster Presentation) Jan 2024 — Jun 2024:

- Developed an end-to-end intelligent traffic management system utilizing computer vision, machine learning, and optimization algorithms to enhance vehicular flow.
- Designed and built a robust vehicle detection and counting module capable of differentiating and tallying cars, trucks, motorcycles in real-time video feeds.
- Leveraging the data to devise an adaptive traffic signal timing algorithm using density-based optimizations to minimize congestion by reducing delays and waiting times at junctions.

2. Intern Railway Scientist at L2MRail - an IISc Bangalore start-up : Jul 2022 — Oct 2022

- As an intern at L2M Rail, I worked on the development of the Wheel Impact Load Detector (F-WILD) system, a collaborative project with RDSO and the Indian Railway. This system captures and processes real-time train wheel signature data from instrumented track sections.
- Contributed to the analysis and interpretation of train wheel signatures using object detection deep learning algorithm YOLO.
- Worked with the team to process images from railway platform cameras, extracting vital train health information and promptly reporting any critical wheel damage to relevant authorities.

3. Machine Learning and Data Science Intern at Internship Studio : Mar 2022 — Apr 2022

- Gained skills for implementing various prediction and classification algorithms based on Machine Learning.
- Built various regression machine learning models and ANN model to predict YouTube ad view count based on other YouTube metrics.

PROJECTS(link)

1. **Intelligent Data Extraction from Document using CV and NLP**
   - Developed a specialized Document Scanner Web App with a customized Named Entity Recognizer (NER) capable of extracting entities from scanned documents, with a primary focus on business cards.
   - Structured the project into several development stages, including setup, data preparation, NER data labeling, data preprocessing, model training, and entity prediction via NER.
   - Manually labeled NER data using BIO tagging (Beginning, Inside, Outside) to train a machine learning model for entity recognition.
   - Implemented a data pipeline for text parsing, rendering results with Displacy, and drawing bounding boxes on images.

2. **Enhancing Product Categorization Through Transformer-Based Attribute Prediction** (Project was done as part of IndoML 2024 - The Fifth Indian Symposium on Machine Learning @ BITS Pilani Goa Campus where I got 9th rank out of 400+ teams participating) (link)
   - Explored advanced transformer models (BERT, LLaMa-2-7B, GPT-J) for multi-task classification and generative tasks.
   - Enhanced model generalization with FAISS-based data augmentation, achieving optimal results with GPT-J (6B parameters).
   - Addressed overfitting through hyperparameter tuning and adaptive learning strategies.
   - Applied NLP models to multi-label classification for real-world e-commerce applications and emphasized scalability and performance through iterative testing and comparative analysis.

3. **Sequential Sentence Classification in Medical Abstracts using NLP (Major Project)**
   - Implemented and extended deep learning models, including Bi-Directional Artificial Neural Networks (Bi-ANN), Bidirectional Long Short-Term Memory (Bi-LSTM), and BERT, for sequential sentence classification in medical abstracts using Natural Language Processing (NLP).
   - Designed and implemented data preprocessing pipelines to clean, tokenize, extract features from raw medical abstract data.
   - Achieved a 92% classification accuracy through model optimization and fine-tuning.

4. **Colour Sorting of Objects with 3D Robotic Arm using OpenCV (at AMURoboclub)**
   - Designed a 3D robotic arm capable of sorting objects with varying colors efficiently.
   - Employed OpenCV for advanced color detection, enabling the robotic arm to recognize and classify objects based on their hues.
   - Utilized a Raspberry Pi for precise control and coordination of the robotic arm's movements.

5. **House Price Prediction Web App using Machine Learning**
   - Designed and implemented a user-friendly web application for predicting house prices.
   - Developed a robust regression machine learning model and generated a corresponding pickle file for efficient predictions.
   - Created the front-end interface using HTML/CSS, offering a seamless user experience.

6. **FoodVision : a Deep Learning Food Classification System**
   - Created and trained a deep learning model using transfer learning techniques, leveraging a pre-trained model to improve food image classification accuracy.
   - Successfully built a system capable of recognizing a wide variety of foods, facilitating applications in dietary analysis, food tracking, and more.

SKILLS

Programming Languages: Python, C, C++, Java, JavaScript, HTML/CSS
Python Frameworks: Numpy, Pandas, Matplotlib, Scikit-learn, OpenCV, Beautiful Soup, SpaCy, NLTK, Flask, PyGame
Deep Learning Frameworks: TensorFlow, PyTorch, Keras
Soft Skills: Communication, Management, Teamwork, Leadership
Other Skills: Arduino UNO, Latex, Video Editing, Content Writing, Poster Making, Critical Thinking

POSITIONS OF RESPONSIBILITY (link)

Coordinator at AMURoboclub : May 2023 — present
- Leadership of university's robotics club with responsibility of organising workshops, supervising robotics projects and leading club's national technical events.
- Organized and managed the successful execution of VERCERA, club's 5-day annual technical event.
- Facilitating educational and technical session and hands-on projects for club members.

Joint Coordinator at AMURoboclub : Jun 2022 — May 2023
- Took part in various club activities like conducting workshops, organising sessions, and building projects.
- Conducted a workshop on Computer Vision attended by 60+ university students.
- Built a 3D robotic arm that sorts different colored objects using OpenCV for color detection.

Volunteer at AMURoboclub : Aug 2021 — Jun 2022
- Developed leadership, communication, problem-solving, group management, presentation, editing and content writing skills during the session.

Technical Team Member at IEEE COMPUTER SOCIETY ZHCET : Aug 2021 — Jun 2022
- IEEE Student Member ID 98797221
- Actively worked with technical team, conducted workshops on Machine Learning, Computer Vision and NLP.

CS Team Volunteer at MTS-AUV Club, ZHCET : May 2022 - July 2022
- Contributed to various technical club activities including events and workshops.

COURSES AND CERTIFICATIONS

- **Machine Learning A - Z** : Hands on Python and Data Science at Udemy
- **Python for Everybody** by University of Michigan at Coursera
- **TensorFlow Developer Certificate in 2023**: Zero to Mastery at Udemy
- **Neural Networks and Deep Learning** at Coursera, DeepLearning.AI
- **AWS Educate Machine Learning - DeepRacer** at AWS Training and Certification
- **30 Days of Google Cloud** at Google Cloud
- **HTML5, CSS3 and JavaScript Fundamentals** at Udemy

EXTRACURRICULAR AND WORKSHOPS

- **Google Research ExploreCSR Intern** at IIT Roorkee : Achieved **2nd Position** in Paper Poster Presentation.
- Participated in **IndoML 2024 - The Fifth Indian Symposium on Machine Learning @ BITS Pilani Goa Campus** and secured **9th Rank** out of 400+ teams for the project.
- **Intern** as a Campus Ambassador at the National Engineering Olympiad, I honed my abilities in team collaboration, leadership, marketing, and communication.
- **Awarded** the SSMAF Overseas Internship and Visiting Research - 2023.
- Got **7th rank among 313 candidates** in a competitive Machine Learning competition hosted on Kaggle during the summer internship at CiSTUP, IISc in 2023.
- **Qualified** 6th National Engineering Olympiad Exam with **Rank under 100.**
- Got **All India Rank 121** in VITEEE Exam.
- Got **under 100 All India Rank** in AWS DeepRacer Student League.
- Attended the two-day workshop on **"Introduction to API development using AWS"** organized by IEEE Student Branch, ZHCET, AMU.
- Participated in **ANDROID STUDY JAMS PROGRAM** organized by GDSC AMU and GDSC ZHCET.
- Attended the **3-day workshop on AI and ML** organized by IEEE Computer Society, ZHCET AMU. (link)