# JAISIDH SINGH

📞 +91-9873200444  ✉ E-mail  in LinkedIn  ⌂ Website  ○ GitHub

## Education

**Indian Institute of Technology Jodhpur** *Dec 2020 to Present*
*Bachelor of Technology in AI and Data Science, CPGA:* 8.23/10 *(till Sem IV)* *Jodhpur, India*

### Relevant Coursework

Deep Learning (A*), Dependable AI (A), Optimization in Machine Learning (A), Pattern Recognition and Machine Learning (A), Decision Making and Reinforcement Learning (A-), Linear Algebra and Differential Equations (A-), Probability and Statistics (A-), CS231N[†]: Stanford Computer Vision, Nvidia-DLI[†]: Transformer Applications in NLP.
[†]: indicates completion in self-learning mode.

## Publications

### Published

- SynthProv: Interpretable Framework for Profiling Identity Leakage **Paper:** 🔗
  ***Jaisidh Singh***, Harshil Bhatia, Aparna Bharati, Richa Singh, Mayank Vatsa, WACV 2024.

- IdProv: Identity-Based Provenance for Synthetic Image Generation (Student Abstract) **Paper:** 🔗
  *Harshil Bhatia\*, **Jaisidh Singh\***, Gaurav Sangwan, Aparna Bharati, Richa Singh, Mayank Vatsa*, AAAI 2023.

\*: indicates equal contribution

## Experience

**Bosch Research India — *Research intern*** *May 2023 to Present*
*With Dr. Amit Arvind Kale* 🔗*, Sonam Singh* *Bengaluru, India*

- Investigated **diffusion-based inpainting** in autonomous driving data.
- Devised a **framework for interpretable failure discovery** in segmentation.
- Developed method achieved **93.5 % accuracy** on BDD100K and ACDC.

**Bosch Research India — *Research intern*** *May 2022 to July 2022*
*With Sonam Singh* *Bengaluru, India*

- **Developed image retrieval pipelines** which were **modular and plug-and-play**.
- Devised **prompts for CLIP in attribute-aware multimodal image retrieval**.
- The framework developed was used for subsequent research and automation.

## Undergraduate Research

**Trusted AI and Biometrics Lab** *July 2023 to Present*
*With Dr. Aparna Bharati* 🔗*, Prof. Richa Singh* 🔗*, Prof. Mayank Vatsa* 🔗 *IIT Jodhpur, India*

- Investigating ways to **provide compositional understanding of negations to VLMs**.
- Developing a methodology tailored towards a **new task of compositional negation matching** for CLIP.
- Working on **integrating emergent compositionality through negation understanding** in VLMs

**Trusted AI and Biometrics Lab** *May 2022 to Jan 2023*
*With Dr. Aparna Bharati* 🔗*, Prof. Richa Singh* 🔗*, Prof. Mayank Vatsa* 🔗 *IIT Jodhpur, India*

- Developed a **novel framework for profiling identity leakage**
- Showed how **StyleGAN2's latent space** foundationally **encodes face-recognition**.
- Published at **AAAI Student Abstracts 2023** and **WACV 2024**.

## Presentations and Talks

- SynthProv: Interpretable Framework for Profiling Identity Leakage **Poster:** 🔗 **Presentation:** 🔗
  ***Jaisidh Singh***, Harshil Bhatia, Aparna Bharati, Richa Singh, Mayank Vatsa, WACV 2024.

- IdProv: Identity-Based Provenance for Synthetic Image Generation (Student Abstract) **Poster:** 🔗
  *Harshil Bhatia\*, **Jaisidh Singh\***, Gaurav Sangwan, Aparna Bharati, Richa Singh, Mayank Vatsa*, AAAI 2023.

## Technical Skills

**Areas of research**: deep learning, computer vision, NLP, explainable AI
**Languages**: Python, LaTeX, JavaScript, Dart, Bash, C++
**ML-DL frameworks**: PyTorch, HuggingFace, Jax, Flax, Scikit-learn, NumPy
**Other technologies**: Selenium, ReactJS, NodeJS, Flutter, Linux, Git, GraphQL

## Projects

**Deep Video Summarization** | *Python, PyTorch*                    Code: 🔗
- An architecture for scoring CLIP frame features to extract key-frames.
- Outperformed previous works on the TvSumm dataset.
- Presented as the course project for Deep Learning 2023@ IIT Jodhpur.

**Large Document Summarization** | *Python, PyTorch, Huggingface*                    Code: 🔗
- A project for summarizating oflarge articles, in a purely inference-based, plug-and-play manner.
- Used hierarchical sentence clustering for extractive summarization.
- Presented as the DL-Ops project for Deep Learning 2023@ IIT Jodhpur.

**Low Resolution Classification with ViT** | *Python, PyTorch*                    Code: 🔗
- A vision transformer architecture developed as my first self-research endeavour.
- Utilized multimodal inputs of images along with attributes for classification.
- Outperformed previous approaches on the AwA2 dataset.

## Achievements

- Scored **117/120** in **TOEFL** 2023.
- Scored **170 in the GRE Quantitative section** and **159 in the GRE Verbal section** 2023.
- Secured **A\* grade in Deep Learning** 2023 course taught by **Prof. Mayank Vatsa** 🔗.
- Achieved **99.43 percentile** and **6428 rank** out of 1.5 million applicants during **JEE Mains 2020**, with **rank 3214 in JEE Advanced 2020**.
- Secured **top ranks in several regional level Olympiads**. Awarded with a laptop by the Science Olympiad Foundation for the same.

## Extracurricular

**Student Guide**                    *2021*
*Student Wellbeing Committee*                    *IIT Jodhpur*
- Mentored 10 mentees personally and professionally.
- Worked with a team of 46 to handle a batch of 500 students.

**Core Member**                    *2021*
*Music Society, Quiz Society, Literature Society, DevlUp Labs*                    *IIT Jodhpur*
- Seasoned guitarist, vocalist, avid reader.
- Performed at cultural events like Inter-IIT Cultural Meet 2023, Ignus 2023
- Assumed collaborative and leadership roles in coordinating activities with juniors.