Uday Agarwal

ndc.uday@gmail.com udayagarwal github.com/uday-me uday-me.github.io

Education

Vellore Institute of Technology **June 2019 – October 2023**
B.Tech in Computer Science and Engineering (spl.AI & ML), CGPA ***8.42/10*** *Bhopal, Madhya Pradesh*
Modules : Fundamentals in AI & ML, Data Structures & Algorithms, Applied Linear Algebra, Computer Vision

Neerja Modi School **May 2019**
Higher Secondary Education (PCM), CBSE, Percentage: ***84.60 %*** *Jaipur, Rajasthan*

Neerja Modi School **May 2017**
Secondary Education, CBSE, CGPA: ***9.6/10*** *Jaipur, Rajasthan*

Publications

PatientVLM meets DocVLM: Pre-Consultation Dialogue Between Vision-Language Models for Efficient Diagnosis
K Lokesh, ***Uday Agarwal****, Abhirama Subramanyam Penamakuri, Apoorva Challa, Shreya K Gowda, Somesh Gupta, Anand Mishra*
Submitted to Association for the Advancement of Artificial Intelligence (AAAI) 2026

Aligning Moments in Time using Video Queries
Yogesh Kumar,* ***Uday Agarwal****, Manish Gupta, Anand Mishra*
International Conference on Computer Vision (ICCV) 2025
*(*equal contribution)*

CHAPVIDMR: Chapter-based Video Moment Retrieval using Natural Language Queries
Uday Agarwal*, Yogesh Kumar*, Abu Shahid*, Prajwal Gatti, Manish Gupta, Anand Mishra*
*Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP) 2024 (****Spotlight****)*
*(*equal contribution)*

Experience

Research Assistant | ***Vision Language and Learning Group*** | ***IIT Jodhpur*** **March 2024 - Present**

- Advisor : ***Dr.Anand Mishra***
- Working on tasks related to *fine-grained Video Understanding like moment retrieval, unsupervised representation learning techniques and localization of temporal segments in videos* among other vision-language problems.
- Served as ***Delegated Reviewer*** in **BMVC 2024** and reviewed research papers from prominent venues like ***ICPR, ICCV, TMLR***.
- *Worked on localizing moments in long videos using multi-modal queries.(co-advisor ==* ***Dr. Manish Gupta (Microsoft India)****).*
- Working on AI applications for healthcare, specifically developing a digital assistant for detecting leprosy from clinical images and patient descriptions. *(co-advisor ==* ***Prof. Chetan Arora (IIT Delhi)****)*

Research Mentee | ***Dr.Ankush Gupta*** | ***Research Scientist, Google DeepMind*** **May 2023 - March 2024**

- Completion of coursework related to Deep Learning, Computer Vision and Artificial Intelligence.
- Reviewing recent research papers and presenting seminars on state-of-the-art approaches
- Completing assignments on programming and training of neural networks.

Data Engineering Intern | *Mr.Mahim Jain* | Allstate India Private Ltd **June 2023 - September 2023**

- Developing the Cross-Channel Customer Journey, particularly the *chat* channel to enhance user experience on the company's platform.
- Converting timestamps in different formats in the dataset to CST for easy application of transformations.
- Converting the Static Data Load process to a Dynamic Load.

Data Science Intern | *Mr.Bhanu Prakash Vasamsetty* | *Turtlemint* **March 2023 - June 2023**

- Implementation of Content-Based Recommender System that suggests relevant courses to the users on the platform
- Evaluate and document the performance of existing Recommender Engines of the organization and identify the one performing better.
- To leverage Machine Learning algorithms like k-NN, k-Means and Matrix Factorisation techniques such as Singular Value Decomposition for creating recommender systems.

Database Management Intern | *Mr. Yash Warrier* | *Beatcurry* **April 2022 - Aug 2022**

- To work on building, managing, maintaining, cleaning and organizing of databases using SQL technologies.
- To build the database using SQL technologies and set up the back up environment of the company.
- To build several strategies for business development and work on newer ideas for the expansion of the company's work.

Projects

- **News Article Recommendation System** : The goal of this project is to recommend news articles to users by leveraging Deep Learning. The dataset here is built from news article headlines from various news agencies which were scraped by the Scrapy framework. BERT model is explored and later similar articles are clustered by algorithms such as k-means, k-medoids.
- **Language Modeling - make-2,3-more** : Implementation of 'character level' bigram and trigram language models from scratch using both approaches, the statistical method and neural networks. Models are used to generate new samples that resemble the names of people. This project also explores various facets of deep learning, machine learning and NLP such as hyperparameter tuning, n-grams, one-hot encodings, etc.
- **Image-Image Retrieval using Supervised Contrastive Learning** : Implemented a neural network-based model that retrieves the most similar images from a gallery, given a query image, using supervised contrastive learning. Using the best-performing pre-trained model as a feature extractor, trained a Residual MLP (Adapter) over the embeddings using multi-positive contrastive learning.

Relevant Coursework

- **Professional Certification Program in Artificial Intelligence and Emerging Technologies by IIT Hyderabad.**
- **CS61A**: Structure and Interpretation of Computer Programs from UC Berkeley
- **Neural Networks: Zero to Hero** by Andrej Karpathy
- **CS231N**: Deep Learning for Computer Vision from Stanford University
- **CS188**: Introduction to Artificial Intelligence from UC Berkeley
- **ENGR108**: Introduction to Linear Algebra from Stanford University.

Technical Skills

Programming Languages: Python, MySQL
Frameworks/Libraries: PyTorch, PySpark, Numpy, Sklearn, Matplotlib, Pandas
Technologies: Git, GitHub, LaTEX
Others: Machine Learning, Deep Learning, Computer Vision, Natural Language Processing, Artificial Intelligence

Achievements

- Received the **Certificate of Merit** from IIT Hyderabad for being one of the top scorers at the *Artificial Intelligence and Emerging Technologies* bootcamp.
- Finalist in the All India Hackathon HackoVIT 2020 organized by VIT Bhopal to develop AI solutions to combat the COVID-19 pandemic.
- Achieved first position (instrumental category - Violin) in the international competition, "Ekta Ke Sur" organized by renowned Indian singer, *Ravindra Upadhayay.*
- Achieved first position in the state-level competition, "KB Growing Stars Open Music Competition" in the instrumental category.

Responsibilities

- **Core Committee Member, SMM Team, AI Club, VIT Bhopal University (2020-2021)** : From managing the team's social networks, to organizing and conducting events and also taking care of the technical aspects of the club. Also organized the Annual AI Conclave '21 and several national and international events through AI Club.
- **Organizing Committee Member, VL2G Group, IIT Jodhpur, (2024)** : In the organizing team of the challenge on Automatic Evaluation of True/False Answer Sheets under the National Conference on Computer Vision, Pattern Recognition, Image Processing, and Graphics (NCVPRIPG 2024). Key responsibilities include designing the website for the challenge and managing the release of data.