Rahul Shukla

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LinkedIn | Github | Portfolio

Education

- **International Institute of Information Technology, Naya Raipur** Raipur, India
  Bachelor of Technology - Electronics and Communication Engineering; Percentage : 77.23 *Dec 2020 - May 2024*
  Courses: *Computer Vision, Data Structures, Machine Learning , Artificial Intelligence, Deep Learning, VLSI, Wireless Communications*

Experience

- **IIITM - Gwalior**
  Summer Research Intern *May 2022 - June 2022*
  - **Overview:**: Built a **NLP** model that could summarise an news article and successfully interpret the meaning.
  - **Dataset Extraction:**: **InShorts** news Dataset was used to train the model.
  - **Model Used:**: Implemented a transformer model **T5** which is a unified **text to text transformer.**
- **NIT - Surat**
  Research Intern *July 2022 - Feb 2023*
  - **Overview - Single Shot Face Recogniton Siamese Model**: Developed a Face Recognition model for a face recognition system based on Siamese Neural Network.
  - **Methodology -** : Used **Triplet Loss** with anchors along Siamese Model for single shot recognition and achieved a accuracy of 96.30

Research Projects

- **Transformer Empowered Gondi - Hindi Translation (Neural Machine Translation, NLP, LLM)** **Code** :
  - **Crux**: Developed an advanced methodology for Hindi-Gondi translation, utilizing a comprehensive framework centered around a Transformer-based Neural Machine Translation (NMT) model.
  - **Method**: Utilized a Transformer-based NMT model with weighted multi-head attention and learnable positional encodings, showcasing robust evaluation results and achieving an outstanding BLEU score.
  - **Tech Stack**: Python, Tensorflow, Kaggle GPU Accelerator, Scikit-Learn
- **Segment Weed - A Novel Weed Detection Approach (Computer Vision, Object Detection)** **Code** :
  - **Crux**: Developed a specialized weed detection system for Chhattisgarh's onion fields, utilizing a dataset of 800 images from IGKV, Raipur, and implementing a novel approach with a modified U-Net model.
  - **Method**: Achieved a remarkable 94% overall segmentation accuracy with the developed weed detection system, enabling effective weed removal in agricultural fields when integrated with hardware by accurately identifying and locating weeds.
  - **Tech Stack**: Python, Tensorflow, Kaggle GPU Accelerator, Scikit-Learn
- **Patent Classification: Extracting Similarity in Patent Documents** **Code** :
  - **Crux**: Competed in the US Patent Similarity Kaggle competition using a Large Language Model ensemble to analyze a text-based patent dataset. Implemented an Ensemble Transformer model combining RoBERTa and DeBERTa for improved Semantic Similarity task performance with data from the USPTO.
  - **Method**: Implemented and fine-tuned an Ensemble model combining RoBERTa and DeBERTa for enhanced Semantic Similarity task performance using USPTO's provided dataset.
  - **Tech Stack**: Python, PyTorch, Kaggle GPU Accelerator, Scikit-Learn

Publications

- **IEEE I2CT 2024**
  R. Shukla, B. Ajwani, S. Sharma, D. Das *Published*
  - **Overview -** : Leveraged machine vision with unsupervised K-means clustering and thresholding on the nucleus for enhanced diagnostic accuracy, overcoming traditional biopsy limitations.
  - **Methodology -** : Implemented a two-stage process involving image segmentation and CNN classification, achieving an impressive accuracy of 97.28%.

Skills Summary

- **Languages**: Python, C, C++, Java, JavaScript, SQL
- **Frameworks**: Scikit-Learn, TensorFlow, Keras, PyTorch, MS Excel
- **DevOpsTools**: GCP, AWS, Azure, Jenkins, Bitbucket, Docker, GIT, AWS Sagemaker, Oracle, RDBMS, Data Warehousing

Honors and Awards

- **Kaggle** : Kaggle Notebooks Expert
- Secured **Rank 2** in **5th Industry-Academia Meet** (IAM) of IIIT Naya Raipur for the AI-based weed detection prototype, April 2023.
- **Solved** over **300+** problems on Leetcode and GFG