Harshit

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Education

- **University of Delhi** — Delhi, India
  Bachelor of Science (Honours) Computer Science; GPA: 8.473/10.0 — *Aug. 2019 – July. 2022*

Research Interests

Vision & Language, Natural Language Processing, Machine Learning & Deep Learning

Publication(s)

- **An Object Localization based Dense Image Captioning Framework in Hindi**
  Santosh Kumar Mishra, **Harshit**, Sriparna Saha, Pushpak Bhattacharyya
  Accepted at ACM Transactions on Asian and Low-Resource Language Information Processing

Industry Experience

- **Bobble AI** — Gurugram, India
  ML Engineer Intern — *June 2022 - Present*
  - **Conversational Intelligence**: Automated the manual sentiment analysis annotation process using BERT. Sped up the overall annotation process by 20.8%.
  - **Super Apps**: Building a real-time news intent predictor and classifier which to be integrated with the current pipeline of super application.
  - **Vector Search Engine**: Scaled MilVus to 1 Billion dataset to provide meaningful insights from raw data.

Research Experience

- **Indraprastha Institute of Information Technology-Delhi** — Delhi, India
  Research Intern — *January 2022 - July 2022*
  - **Vidhaan**: Worked on Long-Sequence legal text processing. Worked on constructing a high-quality corpus of Indian laws to better the natural language understanding of Indian laws.
  - **Speaking Quest**: Built an automatic score evaluator for speech responses in a quiz for Benesse Holdings Japan.

- **Stanford University** — Remote
  Research Volunteer — *October 2021 - December 2021*
  - **Wearipedia**: The Wearipedia project aims to aggregate information about wearable devices in a research context. Worked on medical grading systems designed by Food and Drug Administration (FDA) for wearables and medical mobile applications.

- **Indian Institute of Technology Patna** — Patna, India
  Research Assistant — *Mar 2021 - August 2021*
  - **Dense Image Captioning for Hindi Language**: Worked on first of a kind dense image captioning framework that simultaneously localizes and describes regions of an image in the Hindi language. Implemented the captioning network of the architecture for generating localized captions using LSTMs.
  - **Abstractive Text Summarization using Continual Learning Approach**: Developed the data splitting pipeline for CNN and DailyMail datasets using the Word Mover's Distance and Cosine similarity for a continual learning approach in recurrent neural networks.

Projects

- **Automatic neural image captioning**
  Project Link
  - Implemented an encoder-decoder based inject architecture for the Xception-LSTM model to generate captions for images.
  - Improved the performance of the model by about 2-3% by using pre-trained ImageNet weights for Xception encoder and Stanford's GloVe word embedding for word representation.
- **Predicting programming language of StackOverflow Questions using NLP**
  Project Link
  - Created an LSTM classifier to predict the programming language of questions posted in Stack Overflow.
  - Considered the title and the body of a question to make a prediction and effectively obtained 82.34% precision on the unseen test set.
- **Stock price trend prediction**
  Project Link
  - Built a model based on LSTM to forecast the pattern of three Indian banks' stock prices.
  - Successfully achieved an RMSE of 44.30, 14.83, and 35.79 on the unseen test data of IndusInd, ICICI, and HDFC bank, respectively.
- **Sentiment analysis of movie reviews**
  Project Link
  - Made a two-layer LSTM classifier to predict the positive and negative sentiments of movie reviews.
  - Used IMDB dataset, a collection of more than fifty thousand positive and negative movie reviews, and successfully obtained 90.82% accuracy on the unseen test set.
- **Gender Classifier**
  Project Link
  - Developed a five-layer multilayer perceptron classifier to predict people's gender using different properties of their voices.
  - Used the Voice Gender dataset, a collection of 3,168 recorded voice samples from male and female speakers, and successfully achieved an accuracy of 98.20% on the test set.

Programming Skills

- **Languages**: Python, C++
- **Libraries**: PyTorch, Hugging Face, Keras