Shreya Shukla

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Education

Indian Institute of Technology Jodhpur — Dec 2020 – May 2024
Bachelor of Technology in Electrical Engineering — *CGPA: 7.5/10*

City Montessori School, Lucknow — May 2018 – Mar 2020
Class XII — *Grade: 98.5%*

Experience

Mitacs Globalink Research Intern — May 2023 – Aug 2023
University of Regina | Mentor: Dr. Kin Choong Yow
- Developing a generative transformer-based solution to predict and rectify potential software faults in a program.

Research Intern — Dec 2022 – Jan 2023
Reliance Jio
- Explored different audio representation methods viz. log-mel spectrograms and chromagrams.
- Implemented CNN-Transformer, and transformer encoder-decoder baselines for audio captioning.

Computer Vision Research Intern — May 2022 – Aug 2022
Bosch Global Software Technologies | Mentors: Sonam Singh & Yasaswi Bharadwaj Katta
- Explored self-supervised methods to leverage Bosch's internal unlabelled datasets for traffic-sign recognition.
- Implemented and compared performance from *MoCo and DINO* SSL frameworks using ResNet18 and ResNet50 backbones. Performed image retrieval to evaluate the features obtained without supervision during training.

Research

Decoder-Encoder Alignment — May 2023 – Present
Self-Exploration
- Exploring ways to align encoder embeddings with decoder inputs using techniques like quantization and adaptive layers, to improve machine translation for low-resource languages.

Question Answering on Patent Figures — Feb 2023 – Present
Supervisors: Dr. Anand Mishra, IIT Jodhpur & Dr. Manish Gupta, Microsoft
- Developing novel dataset and methodology for specialized multi-modal question-answering over patent figures.

Towards Making Flowchart Images Machine Interpretable — Mar 2022 – Jan 2023
Supervisor: Dr. Anand Mishra, VL2G Lab, IIT Jodhpur | Project Website
- Proposed *FloCo* dataset for the task of generating executable python codes from flowchart images.
- Developed the novel *FloCo-T5* framework leveraging OCR and OpenCV shape-detection techniques to parse the flowcharts, and masked modeling on augmented codes as a pre-training paradigm for encoding-to-code translation.
- Proposed methodology beats the baselines *Vanilla Transformer, BART, PLBART, and CodeT5* on code generation and gives a 3% boost in the CodeBLEU metric.

Publications

- **Shreya Shukla**, Prajwal Gatti, Yogesh Kumar, Vikash Yadav, and Anand Mishra. *Towards Making Flowchart Images Machine Interpretable*, **ICDAR 2023**.

Technical Skills

Languages: Python, C/C++, Java, MATLAB, Latex
Frameworks & Libraries: PyTorch, HuggingFace, NumPy, pandas, scikit-learn, OpenCV, Tensorflow, Keras
Development: Django, HTML/CSS, Git
General Skills: Machine Learning, Deep Learning, Natural Language Processing & Computer Vision

Achievements

- Awarded with the prestigious ACM-W Scholarship for traveling to ICDAR 2023 conference.
- Selected for the competitive Mitacs Globalink Research Internship'2023 program.
- 100/100 Score in ABU Robocon 2020 Stage-I as part of the IIT Jodhpur Contingent.