STATEMENT OF PURPOSE

END TO END FRAMEWORK FOR LEGAL FIRST INFORMATION REPORT (FIR) DOCUMENT PROCESSING OF DIFFERENT STATES IN INDIA

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Why to Working on this Project?

I am very much interested to learn Deep Learning and Computer Vision models and their implementation. It will going enhance my skills and knowledge on DL and Computer Vision. Working on this project will let me learn a lot from my mentor. It will also going to help me for my CV.

Technical Understanding

- Python, pandas, matplotlib, numpy, sklearn, MongoDB, Basics Of ML, HTML, CSS, Basics of CNN.

Work Flow Of The Project

1. Data Collection:

- Collect a dataset of FIR document images, ensuring representation of various handwriting styles, languages, and document formats.
- Interpret the dataset with ground truth information, including handwritten text, date, time, place, details of the incident, names of individuals involved, and relevant statutes.

2. Data Preprocessing

- Resize, normalize, and augment the dataset to improve model generalization.
- Extract relevant regions of interest (ROIs) from the FIR document images, focusing on handwritten sections.
- Convert annotations into a format suitable for training the object detection and recognition models.

3. Object Detection

- Explore and implement state-of-the-art object detection models such as Faster RCNN, Mask RCNN, Efficient Detection, ViTs, etc., to identify and localize

handwritten text regions within the FIR document images.
- Train the chosen model on the annotated dataset, fine-tuning as necessary.

4. Handwritten Text Recognition

- Implement deep learning models for handwritten text recognition using packages like PyTorch and TensorFlow.
- Train the text recognition model on the extracted handwritten text ROIs, ensuring it can accurately convert images into machine-readable text.

5. Integration

- Integrate the trained object detection and text recognition models into a cohesive framework for end-to-end FIR document processing.
- Implement a system to handle multiple pages, as FIR documents can span several pages.

6. Evaluation

- Define evaluation metrics for both object detection and text recognition.
- Conduct a comparative study on different methods for object detection and recognition, choosing the most effective combination.

7. Optimization

- Fine-tune the framework for optimal performance, considering factors like speed, accuracy, and resource efficiency.
- Address any issues or challenges identified during the evaluation phase.

8. Documentation

- Create comprehensive documentation for the developed framework.
- Provide clear explanations of the chosen models, parameters, and reasoning behind design decisions.

9. Testing

- Conduct thorough testing using a diverse set of FIR document.

10. Deployment

- Deploy the framework for use in legal settings, ensuring compliance with relevant regulations and security standards.

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