

Vichara: Appellate Judgment Prediction and Explanation for the Indian Judicial System

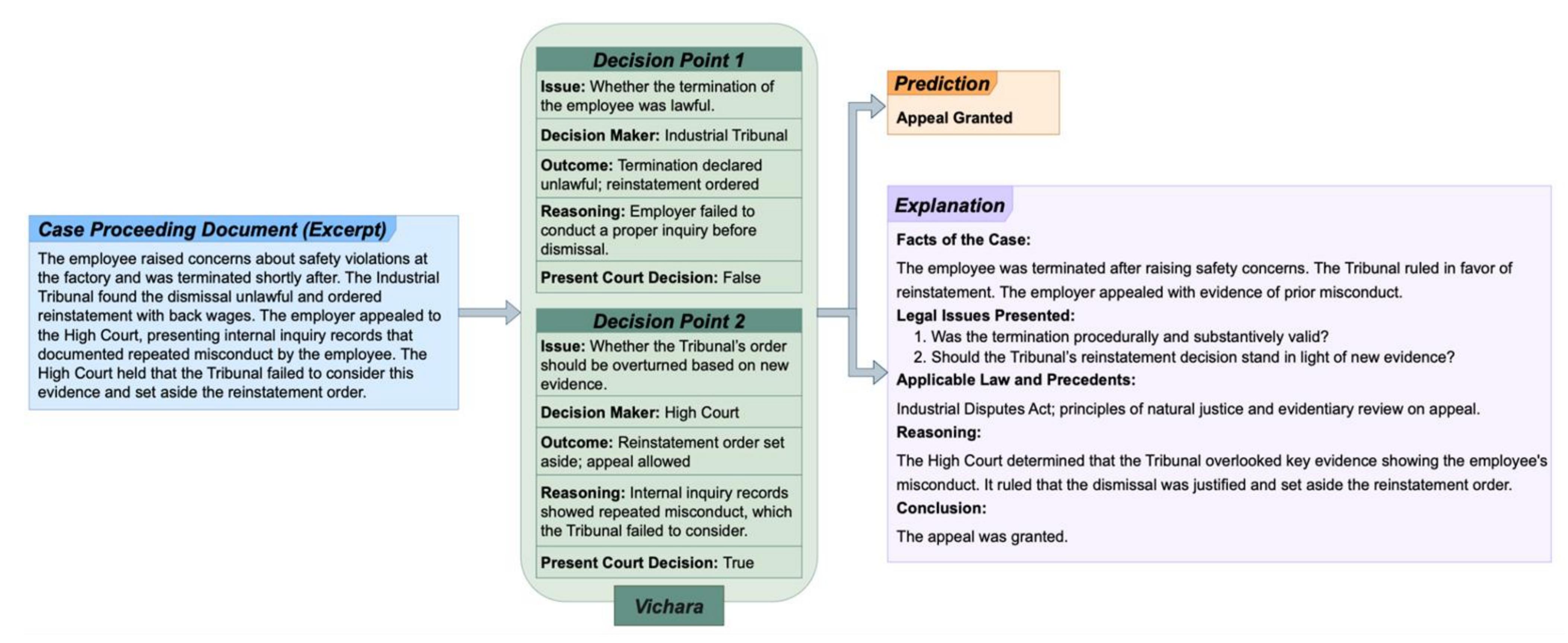
Pavithra PM Nair, Preethu Rose Anish

Motivation

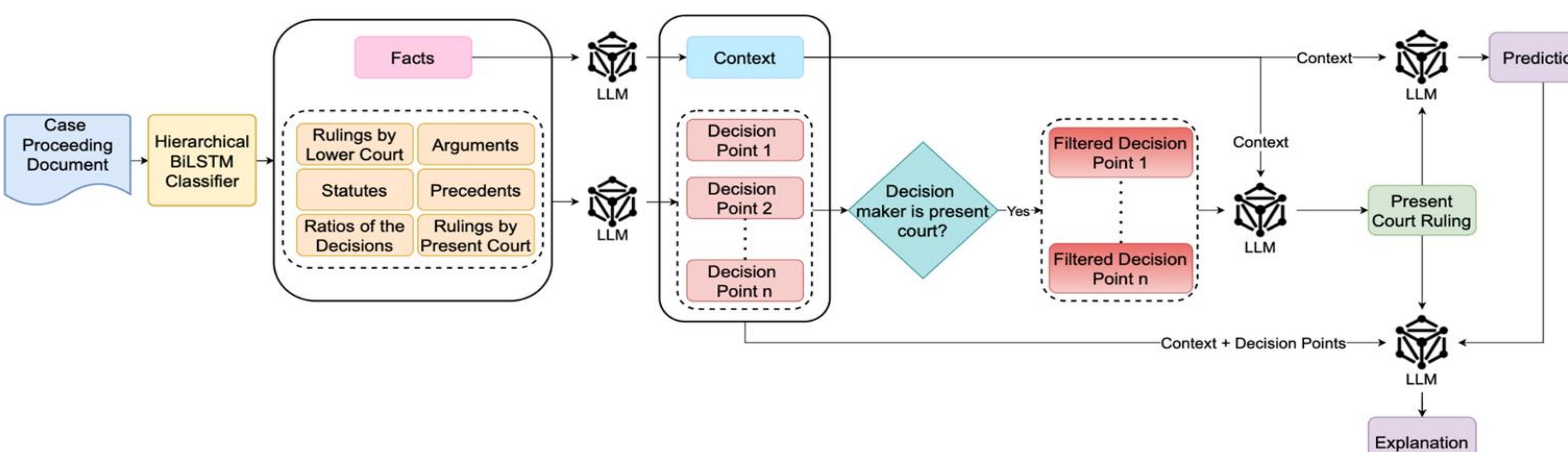
- Indian courts face severe case backlogs, with over 51 million pending cases across judicial levels.
- Appellate cases are especially critical, as they set legal precedent.
- Existing Legal Judgment Prediction (LJP) systems:
 - Prioritize prediction accuracy
 - Provide unstructured or shallow explanations
- In high-stakes appellate settings, lack of structured explanations behind the predicted judgment makes AI outputs difficult to trust or verify.

Overview

- Vichara has two main interconnected components:
 - Appellate Judgment Prediction**
 - Issue-Rule-Application-Conclusion (IRAC)-inspired Structured Explanation Generation**
- Vichara models appellate reasoning through *decision points* – structured representations of discrete legal determinations made during a case.



Methodology



Vichara follows a six-stage pipeline:

- 1. Rhetorical Role Classification**
- 2. Case Context Construction**
- 3. Decision Point Extraction**
- 4. Present Court Ruling Generation**
- 5. Judgment Prediction**
- 6. Structured Explanation Generation**

Results

- Vichara was evaluated with four LLMs: GPT-4o mini, Llama-3.1-8B, Mistral-7B, and Qwen2.5-7B.

Judgment Prediction

- GPT-4o mini achieves best performance:
 - Macro-F1: 81.5 on PredEx
 - Macro-F1: 80.3 on ILDC_expert

- Vichara outperforms existing judgment prediction benchmarks on both datasets.

Explanation Quality (Human Evaluation)

- Evaluated independently by three legal experts on *Clarity*, *Linking* (facts → outcome), and *Usefulness*.
- GPT-4o mini explanations rated highest across all metrics

Datasets

- PredEx**
 - 3,044 Indian appellate cases
 - Binary outcomes + expert explanations
- ILDC_expert**
 - 56 Supreme Court appellate cases
 - Expert-annotated judgments and explanations

Conclusion

- Vichara demonstrates that:
 - Decision-point modeling enables both accuracy and interpretability
 - Structured explanations better align with judicial reasoning
- Future Directions:
 - Reduce computational overhead
 - Extend to other case types, court levels, and legal jurisdictions