“Business Contract Validation”

To classify content within the Contract Clauses & to determine deviations from template & highlight them

Unique Idea Brief (Solution)

1. **Content Classification**: Developed a system to classify and categorize the content within contract clauses, ensuring each clause is correctly identified and labeled based on predefined categories.

2. **Template Comparison**: Implemented a mechanism to compare contract clauses against a standard template, identifying any deviations or discrepancies between the contract and the template.

3. **Deviation Highlighting:** Created a feature that highlights deviations from the standard template within the contract, making it easy to identify and review areas that do not conform to the expected structure or content.

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Features

1. **Clause Categorization**: Automatically classify contract clauses into predefined categories (e.g., payment terms, confidentiality, liability).

2. **Template Matching**: Compare contract clauses against a standard template to identify deviations and inconsistencies.

3. **Deviation Detection**: Highlight deviations from the template within the contract, providing clear indicators for review.

4. **Natural Language Processing** (**NLP**) **Integration:** Utilize NLP to understand and analyze the text, enhancing the accuracy of classification and deviation detection.

5. **Real-Time Validation:** Offer real-time feedback on contract clauses as they are drafted or edited, ensuring immediate identification of issues.

Process Flow

1. **Data Collection**: Gather various types of business contracts.
2. **Data Annotation**: Label key entities and clauses to create a structured dataset.
3. **Data Preparation**: Prepare the annotated data for training.
4. **Model Training**: Fine-tune the BERT model on the dataset to learn legal language nuances.
5. **Model Evaluation**: Assess model performance using accuracy, precision, recall, and F1 score.

Process Flow

6 **Model Selection**: Choose the best-performing model.

7 **Making Predictions**: Use the selected model to classify new contracts and highlight deviations.

Technologies Used

Natural Language Processing (NLP)

Libraries: NLTK, SpaCy

Use: Text classification, clause extraction, deviation detection

Machine Learning

Libraries: Scikit-learn, TensorFlow, PyTorch

Use: Model training and prediction.

Data Analysis

Libraries: Pandas, NumPy

Use: Data preprocessing, statistical analysis.

Team Members and Contribution

1. **Yuvraj Singh Sukhmani**

- Developed and trained the machine learning models for classifying contract clauses.
- Implemented algorithms to detect deviations from the template contracts.

2. **Sanskruti Pawar**

- Conducted initial data cleaning and preprocessing of contract clauses.
- Performed statistical analysis to identify common deviations and patterns.

Team Members and Contribution

3. Om Thakkar

- Conducted initial data cleaning and preprocessing of contract clauses.
- Analyzed datasets to identify key features and patterns relevant for classification and deviation detection

4 Prathamesh Kalkute

- Collaborated on data preprocessing tasks, ensuring data quality and consistency.
- Assisted in feature extraction and selection for machine learning models

Conclusion

- The Business Contract Validation project successfully achieved its goal of classifying content within contract clauses and determining deviations from the standard templates.
- By leveraging advanced NLP techniques and machine learning models, the team was able to automate the detection process, reducing manual effort and improving accuracy.
- Overall, the project demonstrated the effective integration of multiple technologies and collaborative team efforts to solve a complex problem in contract management.