Group Proposal: Contract Q&A

Problem Statement

We aim to build a contract question-and-answer (Q&A) system that can answer targeted questions about clauses in commercial agreements and cite the supporting text. Contract review is labor-intensive and error-prone. This tool will help lawyers provide precise answers with evidence, reducing review time and improving consistency.

Dataset

We will use the public CUAD v1 dataset (~510 real contracts). It provides contract text and labels aligned with what lawyers search for during review, plus Q&A-style annotations for evaluation.

NLP Methods / Approaches

1) Baseline (Classical NLP): Use keyword search (TF-IDF) to find likely sentences and small rules/regex to pull an answer.

2) Fine-tuned QA (BERT): Train a transformer (BERT) on CUAD's Q&A format to predict the start and end of the answer span within a text chunk (span extraction).

3) RAG (Retrieve-and-Generate): Retrieve top relevant chunks from the contract, then prompt the model to quote the exact span and provide a short answer.

We will focus on span-extraction QA for clause-centric questions and verify that predicted answers cite the correct contract span.

Tools and Packages

- Data/Modeling: Hugging Face datasets, transformers, PyTorch

- Retrieval (for RAG): faiss

- Evaluation/Utils: evaluate, scikit-learn, pandas, numpy, matplotlib

These are standard, well-supported libraries for building, training, retrieving, and evaluating Q&A systems quickly and reproducibly.

Metrics

- Accuracy: Exact Match (EM) and token-level F1 (standard Q&A scores)

- Evidence quality: Precision and recall on the predicted span (does it point to the correct clause?)

Schedule

- Week 1: Setup & Explore (Download CUAD, verify splits, build a simple text chunk)

- Week 2: Baseline & Fine-tuned (Implement TF-IDF + small rules; fine-tune BERT on CUAD)

- Week 3: RAG (Connect retrieval to Q&A and return quoted spans + short answers)

- Week 4: Report & Presentation (Compare results, prepare figures/tables, finalize slides and write-up)