AI Contract Review

Architectural Spike Report

By

Aiden Green

Catherine Bickerton

Jay Scott

Luke Robinson

COMP 4710 Senior Design

Department of Computer Science and Software Engineering

Samuel Ginn College of Engineering, Auburn University

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1.0 System Metaphor (Bickerton)

The Office of Sponsored Programs at Auburn University reviews all potential external contracts, proposals, and awards to determine whether the university can negotiate or approve them. Staff members are currently required to review each contract manually, which is time-consuming, arduous, and inefficient. Our team's goal is to design an artificial intelligence program that reviews all incoming contracts, flags conflicts within them, and suggests alternative wording in accordance with the university's guidelines. This program will streamline the contract review process for OSP staff members and learn from successful contract negotiations to strengthen its functionality.

2.0 Cycle Intent (Bickerton)

The objective of this architectural spike is to review previous designs of this software created by other Senior Design teams and determine the optimal approach going forward this semester. The team intends to improve on prior implementations and transform the current AI contract program into a more reliable and robust software. To begin this progress, team members familiarized themselves with the preexisting code and created a demo to showcase for the architectural spike presentation. In order to gain valuable insight into the software architecture of document parsers, team members independently completed an AI parser project provided by Harvard University's CS50 Introduction to AI with Python course. This simplified parser project encourages participants to create an AI that parses sentences and extracts noun phrases using the Natural Language Toolkit (NLTK) library.

3.0 User Stories (Green)

3.1 User Stories Defined

Document Scanning

- Summary: As a contract reviewer I want a tool that scans agreements to find problematic language to increase the speed at which my department operates.

- Description: This feature should scan an agreement and search for problematic language and clauses that are not acceptable. The scanned agreement should be compared to the FAR Matrix and Contract T&Cs Matrix to flag these issues for review or removal.
- Planned Hours: 12
- Planned this cycle: 12
- Actual: 3
- Actual this cycle: 3
- Coders: N/A
- Testers: N/A
- Reviewers: N/A
- Status: Not started

Suggest Alternative Language

- Summary: As a contract reviewer I want a tool that can suggest alternative language for the problematic language that has been flagged instead of having to manually search for it.
- Description: This feature should use approved AU alternative language documents to suggest alternative language to a document reviewer when encountering flagged problematic language and clauses.
- Planned Hours: 15
- Planned this cycle: 5
- Actual: 0
- Actual this cycle: 0
- Coders: N/A
- Testers: N/A
- Reviewers: N/A
- Status: Not started

Learning from Negotiations

- Summary: As a contract reviewer I want a tool that can learn from past negotiations and provide better and more accurate suggestions to more quickly and consistently lead to successful negotiations.

- Description: This feature should retain information gained from past negotiations and learn from its successes and failures to improve performance in the future. (There are many instances where the same types of negotiations have to be made with the same companies, this will allow some steps to be skipped, thus saving time.)
- Planned Hours: 30
- Planned this cycle: 0
- Actual: 0
- Actual this cycle: 0
- Coders: N/A
- Testers: N/A
- Reviewers: N/A
- Status: Not started

Risk Assessment

- Summary: As a contract reviewer I want a tool that will give me an overall risk rating for a contract so I can make appropriate risk assessments during a negotiation.
- Description: This feature should take into account all risk factors for a given contract and provide past relevant information to assist reviewers in a manual risk assessment. This will be useful when the negotiations do not follow a typical format.
- Planned Hours: 40
- Planned this cycle: 0
- Actual: 0
- Actual this cycle: 0
- Coders: N/A
- Testers: N/A
- Reviewers: N/A
- Status: Not started

4.0 Design Documentation (Green)

4.1 Language

We are the second semester of students assigned to this project and all of the existing code-base is written in Python. We have all decided that it will be easiest to remain with this language, as we are all confident in our Python knowledge. Python also has many readily available machine learning libraries, such as scikit-learn, that we can make use of for the more complicated portions of this project.

4.2 Architecture

This project will take in the text of a given document and process it in many different ways to speed up the contract review process. Currently (for a simplified layout description), there is a simple GUI where the user can select a desired document, save it, and then scan it. When the user selects the ‘scan’ option the main operation of the script begins, which is as follows: the contract is converted to a .txt file (this makes the document easier to deal with), the script to flag problem language is then ran (using the FAR Clause Matrix and T&Cs Matrix that load on GUI open), the scanned contract is then converted back to a docx file, and then the contract is annotated when back in its original state.

5.0 Meeting Minutes (Bickerton)

5.1 Client Meeting (01/23/2024)

- Both project teams approached the client, Darren May of the Office of Sponsored Programs, to schedule an introductory in-person meeting. This meeting took place at the Research and Innovation Center. Darren May gave an in-depth explanation of the current state of the project as well as his desired deliverables for the end of the semester. The teams decided to work together on the software rather than compete with each other so that more progress can be made toward achieving the client’s goals. Members not present were immediately debriefed on the meeting’s main points.

- Attendees: 3 orange team members (one member with excused absence), 2 blue team members, 1 client
- Time: 9:30 - 10:30 (1 hour)

5.2 Spike Meeting (01/25/2024)

- The orange team met virtually via Discord to allocate tasks related to the architectural spike to specific members. Members stayed in close contact as they broke off to complete the day's goals.
- Attendees: all orange team members
- Time: 2:30 - 4:30 (2 hours)

5.3 Wrap-Up Meeting (01/28/2024)

- The orange team met virtually via Discord to finish up any remaining tasks before the architectural spike's due date.
- Attendees: all orange team members
- Time: 5:30 - 6:30 (1 hour)

6.0 Lessons Learned (Robinson)

As we began dissecting what this project looks like for us as a team for the rest of the semester we found both things we can do better now to improve our product and performance as a team, as well as things that we foresee needing to learn and improve on as we progress through this project. The most notable of these was of course the ability to communicate effectively to increase our effectiveness as a team and our ultimate goal of providing this contract review tool for our customers. Initially communication was limited as we were unfamiliar with each other and taking on tasks from other projects, but the further we got into this project the more we gained interest, and realized we were going to need to collaborate at a high rate to be successful.

As far as technical aspects go, we have found that there will be some steep learning curves that will have to be taken on to achieve our end goal of a polished product. From reading documentation to better understand tools like Scikit-learn, to exploring how to normalize our datasets, there were many things we have learned and will have to continue to expand upon our existing understanding of.

And of course given the nature of this project, we have begun to learn much about the nature of these research contracts pertaining to our software. There are

many terms & conditions, as well as regulations that must be considered by our model.

In all, as we have already learned many things about each of these aspects of our project, we also recognize that the need to learn only continues to grow as we progress in developing this ai contract review model.

7.0 Test Documentation (Scott)

Minimal testing has been done while we first ensured that the project from the prior group was a viable starting point for our group. Our testing allowed us to conclude that the prior project is in a state where we can potentially build upon the work rather than start from scratch. However, we will have to read over the code and documentation to properly understand how it functions. Several features of the current project could use some improvements as some are simply unfinished, and other features seem to be working but could use some improvements for better usability for the client.