11791 Homework 3 - Report

Requirements and Work Completed

1. ***Creating an Running a CPE***

   a. ***Using org.apache.uima.tools.components.FileSystemCollectionReader, read the files from the input file directory. Write the corresponding Collection Reader descriptor. Include it in the CPE pipeline.***

   - Collection Reader descriptor available at
     resources/collectionReaderDescriptors/collectionReaderDescriptor.xml

   b. ***Construct a Cas Consumer using the Evaluation Annotator and include it in the CPE pipeline.***

   - Cas Consumer available at
     java/edu/cmu/deiis/casConsumers/EvaluationCasConsumer.java
   - Descriptor for Cas Consumer available at
     resources/casConsumers/EvaluationCasConsumer.xml

   c. ***Include the Aggregate analysis Engine from Homework 2***

   - Aggregate analysis engine available at
     resources/hw2-vvv-aae.xml

   d. ***Construct a Collection Processing Engine with all of these components***

   - Collection Processing Engine available at resources/hw3-vvv-CPE.xml

2.2

   a. ***Create a UIMA AS client for the Stanford NLP Service***

   - UIMA AS client descriptor for the Stanford NLP Service available at resources/scnlp-vvv-client.xml

   b. ***Use Stanford NLP Service to improve the Answer Scoring annotator***

   - Old AnswerScoringAnnotator available at edu/cmu/deiis/annotators/Hw2AnswerScoringAnnotator.java
   - New AnswerScoringAnnotator available at java/edu/cmu/deiis/annotators/AnswerScoringAnnotator.java

   Strategy used in improved AnswerScoringAnnotator: The improved AnswerScoringAnnotator uses the Token annotations of the Stanford Core NLP Service to get **Part of Speech** information (allowed according to 'Bonus' section of assignment) about the tokens in the Question and Answer and then used **Skip N Grams** to count the number of tokens from anywhere in the sentence in sentence order that matched in the Answer and the corresponding question.

c. ***Compare the Accuracy and Speed of the new pipeline with the pipeline from homework 2***

- My Homework 2 scoring system used the **Gold Scoring** technique.
- Because the Gold Scoring technique was used, its **accuracy was 100**% on both files.
- Its **precision was 50%** on **q001.txt** and **60.00%** on **q002.txt.**
- The **total duration** for the CPE pipeline was 38ms.

- My Homework 3 scoring system used **Part of Speech Tagging and Skip NGrams**.
- Its accuracy was lower than the Homework 2 scoring system. It basically missed all passive sentences because it only considers Skip N Grams in sentence order. Unfortunately for passive sentences, the order of the occurrence of nouns is the reverse of the corresponding active sentence. For example

  Active: Booth shot Lincoln
  Passive: Lincoln was shot by Booth

- Its precision was **18.75%** on **q001.txt** and **40.00%** on **q002.txt**.
- The total duration for the CPE pipeline was **852ms**. This is primarily because of Stanford NLP which has a duration of **810ms .**

2.3

a. Create a deployment descriptor for the aggregate analysis engine

- Deployment descriptor available at resources/hw2-vvv-aae-deploy.xml

b. Create a client descriptor

- Client descriptor available at resources/hw2-vvv-aae-client.xml

c. **Create a CPE descriptor**

- CPE descriptor available at resources/hw3-vvv-aae-as-CPE.xml