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Knight Foundation School of Computing & Information Sciences

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ANAnSI

Student: *Daniel Chang*

Project Manager: *Antonela Radas*

Project Owners: *Dr. Mark Finlayson, Dr. Karine Megerdooomian, and Mustafa Ocal*

Instructor: *Dr. Masoud Sadjadi*, Florida International University

Problem

Qualitative temporal graphs that are derived from annotations on text- e.g., TimeML annotations- explicitly reveal only partial orderings of events and times. For many purposes, however, a total ordering (i.e., a timeline) is more useful.

Unfortunately, timelines are rarely explicit in text, and usually cannot be extracted directly. Instead, texts explicitly reveal only partial orderings of events and times. Such information can be used to construct a temporal graph by using a temporal representation language such as a temporal algebra or TimeML.

Current System

The purpose of the ANAnSI is to map the ANAnSI data structure to TimeML structure for Timeline extraction. The current system is the backend code which Parses through a json file and extracts the information needed to create the ANAnSI data structure, once the data structure is created with the information extracted, the system maps the ANAnSI data structure to TimeML data structure. Once the mapping is done, the system will do the timeline extraction and prints some output.

Requirements

- The code/system will accept Json files from the user.
- The system will extract the information needed to create an ANAnSI data. structure which then will map the information to the TimeML data Structure.
- Once mapped, the System will create a TimeML data structure for timeline extraction.

Technologies



Contributions

Before mapping from ANAnSI to TimeML each member was tasked with the creation of different classes. My contribution was the creation of:

- LinguisticEvent class
- LinguisticEvent interface
- JsonParser for the LinguisticEvent part.
- JUnit testing for LinguisticEvent JsonParser (LinguisticEvent part)

Screenshots

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MATCHED LINKS
ANAnSI lid: 1775 firstNode: say secondNode: become reltype: EVIDENTIAL
TimeML lid: 29 firstNode: say secondNode: become reltype: EVIDENTIAL
ANAnSI lid: 2863 firstNode: learned secondNode: taken reltype: EVIDENTIAL
TimeML lid: 28 firstNode: learned secondNode: taken reltype: FACTIVE

LEFTOVER LINKS FROM ANAnSI
ANAnSI lid: 2112 firstNode: was secondNode: flew reltype: AFTER
ANAnSI lid: 1283 firstNode: say secondNode: fight reltype: EVIDENTIAL
ANAnSI lid: 2283 firstNode: was secondNode: included reltype: EVIDENTIAL
ANAnSI lid: 2837 firstNode: chosen secondNode: were reltype: SIMULTANEOUS
ANAnSI lid: 1286 firstNode: is secondNode: say reltype: EVIDENTIAL
ANAnSI lid: 2854 firstNode: was secondNode: were reltype: SIMULTANEOUS
ANAnSI lid: 2531 firstNode: say secondNode: held reltype: EVIDENTIAL

```

Figure 1: Sample output of links

Property on LinguisticEvent	Map to TimeML
Event "Report"	class "REPORTING"
Event "Achievement"	class "OCCURRENCE"
Event "State"	class "STATE"
Event "Realization"	class "STATE"
Event "Task/Action"	class "ACTION"
Event "Realization/Action"	class "ACTION"
No EventType "Report" and no Event (default)	class "OCCURRENCE"

Figure 2: Relationship between events

Summary

TLEX (TimeLine EXtraction), a new technique for extracting timelines from natural language texts that have been annotated with the TimeML markup language. TLEX draws ideas from both NLP and the AI sub-field of temporal constraint problem solving.

To instantiate TLEX in a polished Java library that can be easily used by other researchers in the field, our team must map the ANAnSI data structure, to TimeML standards in order to proceed to timeline extraction.

We must convert the ANAnSI, also known as **Advanced Narrative Analytics System Infrastructure**, prototype system output to the TimeML standards.

Resources

- 1) Essential Scrum: A Practical Guide to the Most Popular Agile Process (please read only chapter 2 and chapter 4)
- 2) J. F. Allen (1983) Maintaining Knowledge about Temporal Intervals
- 3) Sauri et. al. (2006) TimeML Annotation Guidelines
- 4) Pustejovsky et. al. (2003) The TimeBank Corpus
- 5) TLEX: A Formally Correct Method for Extracting Exact Timelines from TimeML Temporal Graphs

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