NARRATIVE EVENT AND TEMPORAL RELATION VISUALIZATION TOOL

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GENERAL BACKGROUND

• This prototype is being tested as part of the Temporal Histories of Your Medical Event (THYME) project\(^1\)

• It will soon be integrated into Apache clinical Text Analysis and Knowledge Extraction System (cTAKES)\(^2\), and as such

• It will be available through the Informatics for Integrating Biology & the Bedside (I2B2) platform\(^3\)

• Use of the tool will also play a part in a project in the oncology domain funded by the National Cancer Institute (NCI)

\(^1\) [http://thyme.healthnlp.org](http://thyme.healthnlp.org)
\(^2\) [http://ctakes.apache.org](http://ctakes.apache.org)
\(^3\) [http://www.i2b2.org](http://www.i2b2.org)
ACKNOWLEDGMENTS

• This work is partially supported by:
  – THYME (R01LM010090), and
  – I2B2 (U54LM008748) from the National Library of Medicine

• Major contributors to the tool are:
  – Piet C. De Groen, Primary Investigator
  – Sean Finan, Lead Developer¹

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TRADITIONAL TIMELINE REPRESENTATION

Events in the Life of Benjamin Franklin

1706 - Born in Boston (1706/01/17)
1726 - Moves to London
1728 - Print apprentice at the printer's shop
1735 - Married
1737 - Appointed Postmaster of Phila.
1746 - Printed the first issue of the Pennsylvania Gazette
1752 - Written and published the famous kite experiment
1758 - Created the Franklin stove
1765 - Fled to France for safety during the Stamp Act crisis
1776 - Elected President of the Continental Congress
1777 - Drafted the American Declaration of Independence
1787 - Philadelphia convention
1790 - Died in Phila. (4/17/1804)

Abridged History Of The World

Dinosaurs go extinct

Democracy, unprecedented human achievement and technological advancements

Some wars and stuff

Doghouse Diaries
RELATION TYPE SYMBOLS

Before

After

Ends-on

Begins-on

Within
(Contained By)

Overlaps

1:00 pm

2:00 pm
EVENT COUNT THICKNESS

1:00 pm

One or Two

Three or Four

Gobs

2:00 pm

I STALK THE STREETS
SOLVING GEOMETRY-
BASED QUANDARIES.
BIT OF A NICHE.

POLYGON MAN
EVENT CERTAINTY COLORS

1:00 pm

Affirmed

Uncertain

Negated

2:00 pm

Patient has arthritis

Patient may have arthritis

Patient does not have arthritis
Patient had sore joints
Patient had a blood test
Patient has arthritis
Patient takes Ibuprofen
Patient is happy
Patient had **sore joints**
Patient had **sore joints** at 1:00 pm

**sore joints**

*Is within 1:00 pm*
INDEFINITE TIME SHADING

1:00 pm  2:00 pm

Affirmed

Patient had joint pain an hour ago

Uncertain

Patient may have had pain an hour ago

Negated

Patient did not have joint pain an hour ago
PUTTING IT ALL TOGETHER ...

1:00 pm

Sign / Symptom

Patient had **sore joints**
(but no enlarged joints)
an hour ago
but not at 2:00 pm

- Overlaps an hour ago
- Ends on 2:00 pm
DEMONSTRATION
COMING ATTRACTIONS

- Display of an aggregated timeline from multiple notes
- Direct integration with cTakes NLP software
- Selection of text within the note to focus upon times and events in the graphical timeline
- Display of non-temporal relation information for events such as location, severity, cause, etc.
- Indication of symptom, disease, dosage progression
- Display of additional time expressions such as sets and durations
- Links upon the timeline to external media
- Improved time span display symbols, colors, etc.
- Improved event info panel display and interaction
- Integration of structured data
THANK YOU