Interactive Visual Analysis of Transcribed Multi-Party Discourse

- Broad range of server-based processing steps, ranging from data mining and statistical analysis to deep linguistic parsing of English and German.
- Browser-based Visual Analytics components enable multiple perspectives on the data.
- Interactive visualizations allow exploratory content analysis, argumentation pattern review, and speaker interaction modeling.

Poster: Illustration of visualization components via transcripts of the 3 televised US presidential election debates from 2012 between Obama and Romney. Obama as Democrat (blue), Romney as Republican (red), and all moderators combined as Moderator (green).

Lemmati Headings
High-level overview of the content of the transcripts, based on the concept of lexical chaining, i.e., word chains that appear with high density in the text.
- The lexical episodes are visualized as bars on the left of the text.
- Each utterance is rendered by one box with each sentence as one line.
- This visualization supports a smooth uniform zooming from the text level to the high-level overview to support close-reading and distant-reading.
- The level of detail is adjusted by changing the detection significance level.

Named-Entity Relationship Explorer
Analysis of different concepts and their relation in the utterances. Concepts categorized into 10 classes: Persons, Geo-Locations, Organizations, Date-Time, Measuring Units, Measures, Context-Keywords, Positive- and Negative-Emotion Indicators, and Politeness-Keywords.
- Concept relations extracted using a distance-restricted entity-relationship model to comply with the ungrammatical structure of verbatim transcriptions.
- Relations can be explored in the Entity Graph.
- All views support a rich set of interactions, e.g., linking, brushing, selection, querying and interactive parameter adjustment.

Argumentation Feature Fingerprinting
Glyph-based visualization shows the deliberative quality of debates. Glyph maps the four theoretical dimensions of deliberation in its four aches.
- Four quadrants: NW (Accommodation), NE (Atmosphere & Respect), SE (Participation), SW (Argumentation & Justification).
- Rows group features that are thematically related, e.g., emotion or topic shift.
- Each feature is represented as a small rectangular box.
- Different types of data (binary, numerical, bipolar) are encoded using different color scales and icons.
- The glyphs can be aggregated for utterance, topics, speakers, or their parties.

Argumentation Feature Alignment
Feature alignments generated using sequential pattern mining on selected features. Allows users to verify their hypotheses about patterns across multiple conversations using discourse features.
- Figures show an alignment on the following 3 features: Speakers (Obama, Romney, Moderator), Topic Shift (Progressive, Recurring), Arrangement (Agreement, Disagreement).
- A pattern found in all debates: Obama makes a statement, followed by a topic shift and a turn to Romney and the moderator, followed by an agreement.
- For further analysis, the user can switch to a comparative close-reading view to investigate two occurrences of the found pattern on the text-level.

Topic-Space Views
Interactions between speakers modeled via the metaphor of a closed discussion floor. All discussed topics span the topic space, i.e., an animated radial plot showing interaction of speakers over the course of a discussion.
- The figure displays one time-frame of the utterance sedimentation view of the accumulated presidential debates.
- The length of the arch representing a topic is mapped to the size of the topic.
- All active speakers are displayed as moving dots with motion chart trails.
- A gradual visual decay occurs extending out non-active speakers over time.
- Using a sedimentation metaphor, all past utterances are pulled to their topic by a radial gravitation.

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