VisArgue

http://visargue.inf.uni.kn/

Interactive Visual Analysis
of Transcribed Multi-Party Discourse

Universität Konstanz

VisArgue: The first web-based Visual Analytics framework for the analysis of multi-party discourse data using **verbatim text transcripts.**
- 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).

Lexical Episode Plots

High-level overview of the content of the transcripts, based on the concept of **lexical chaining**, i.e., word chains that appear with a **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**.
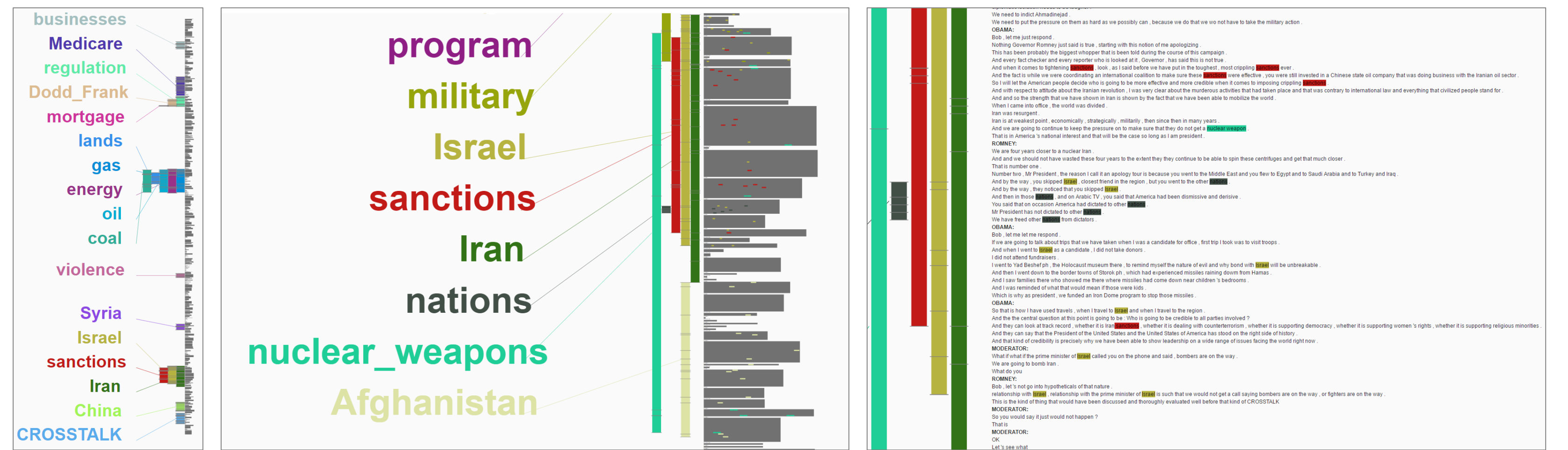
Valentin Gold, Christian Rohrdantz, and Mennatallah El-Assady. 2015. **Exploratory Text Analysis using Lexical Episode Plots**. Eurographics Conference on Visualization (EuroVis) - Short Papers, 85-89.
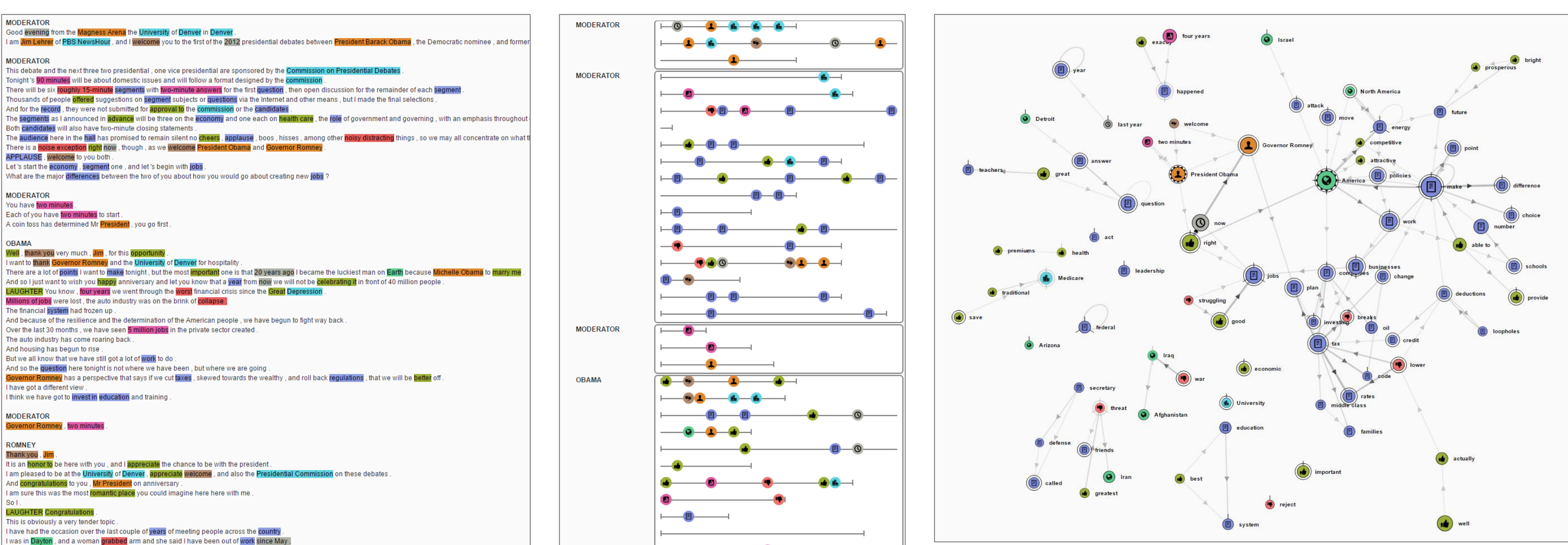
Named-Entity Relationship Explorer

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.

Mennatallah El-Assady, Rita Sevastjanova, Bela Gipp, Daniel Keim, and Christopher Collins, 2017. **NEREx: Named-Entity Relationship Exploration in Multi-Party Conversations**. Computer Graphics Forum, 36(3):213-225.

Argumentation Feature Fingerprinting

Glyph-based visualization shows the **deliberative quality** of debates. Glyph maps the four **theoretic 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.

Valentin Gold, Annette Hautli-Janisz, Katharina Holzinger, and Mennatallah El-Assady, 2016. **VisArgue: Analysis and Visualization of Deliberative Political Communication**. Political Communication Report, (26) 1-2.

ROMNEY	MODERATOR	OBAMA
Position: REPUBLICAN	Position: NEUTRAL	Position: DEMOCRAT
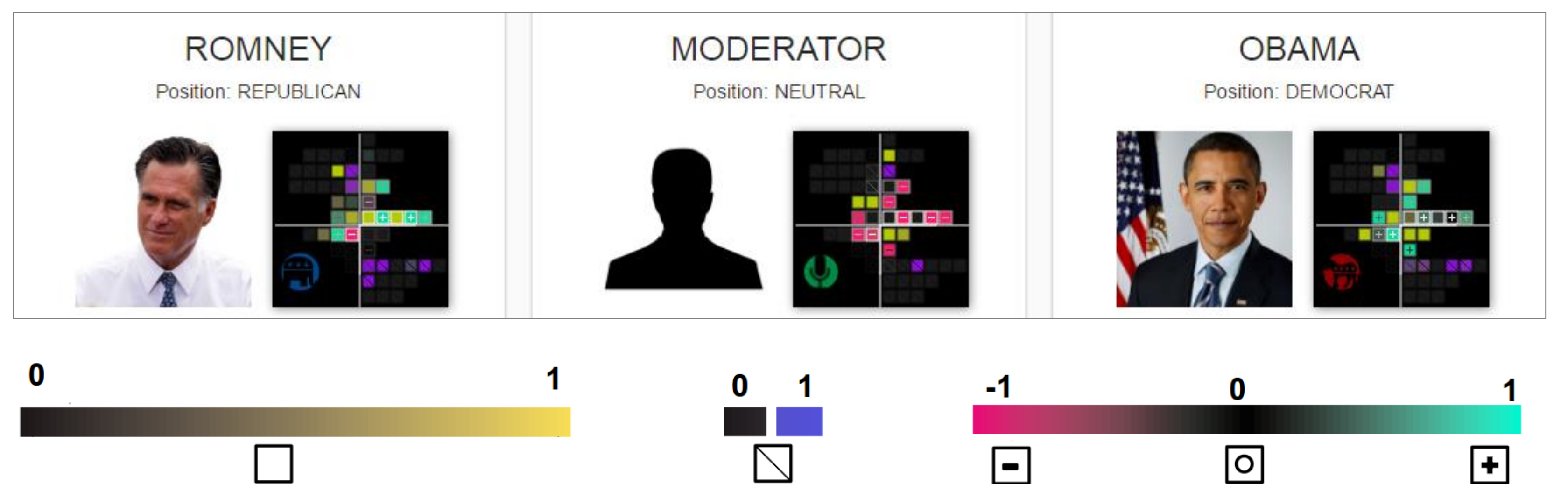
Argumentation Feature Alignment

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**.
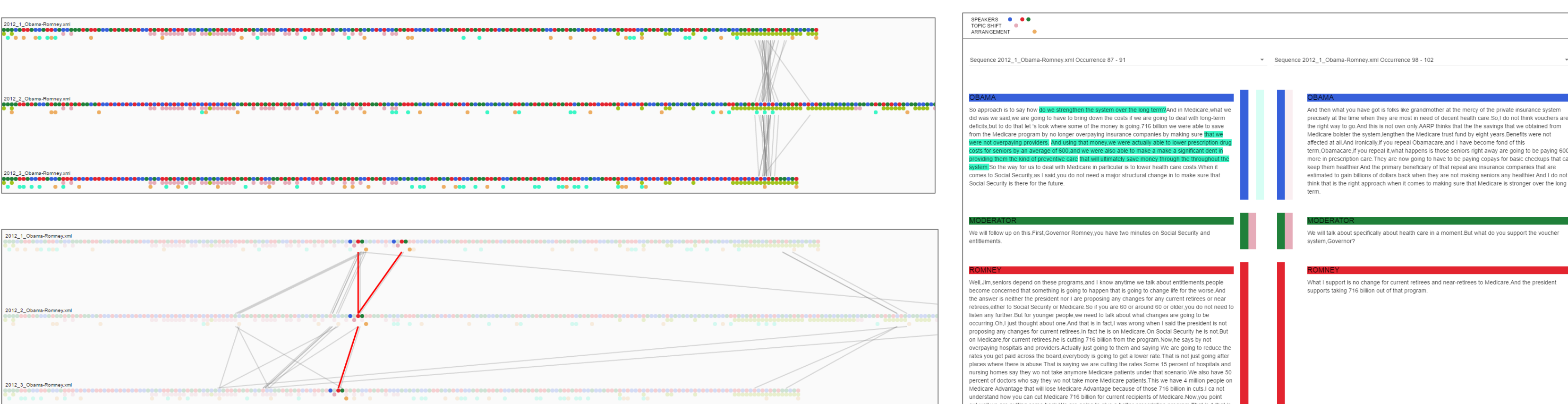
Wolfgang Jentner, Mennatallah El-Assady, Bela Gipp, and Daniel Keim, 2017. **Feature Alignment for the Analysis of Verbatim Text Transcripts**. EuroVis Workshop on Visual Analytics (EuroVA), 13-17.

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 function blends out non-active speakers over time.
- Using a **sedimentation** metaphor, all past **utterances** are pulled to their **top topic** by a **radial gravitation**.
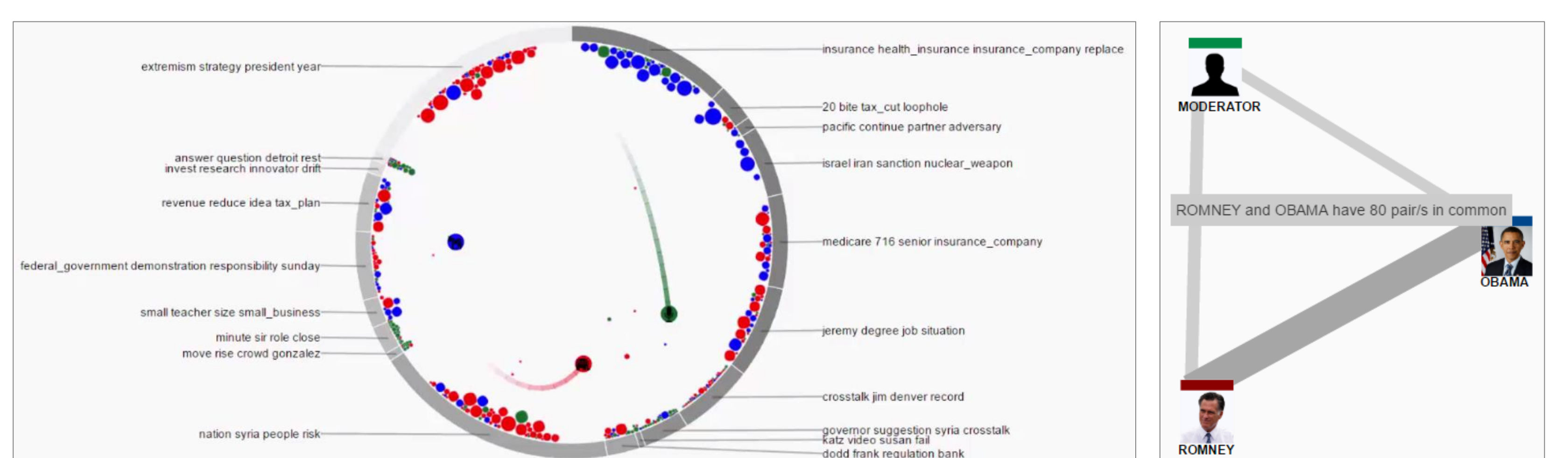
Mennatallah El-Assady, Valentin Gold, Carmela Acevedo, Christopher Collins, and Daniel Keim, 2016. **ConToVi: Multi-Party Conversation Exploration using Topic-Space Views**. Computer Graphics Forum, 35(3):431–440.

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