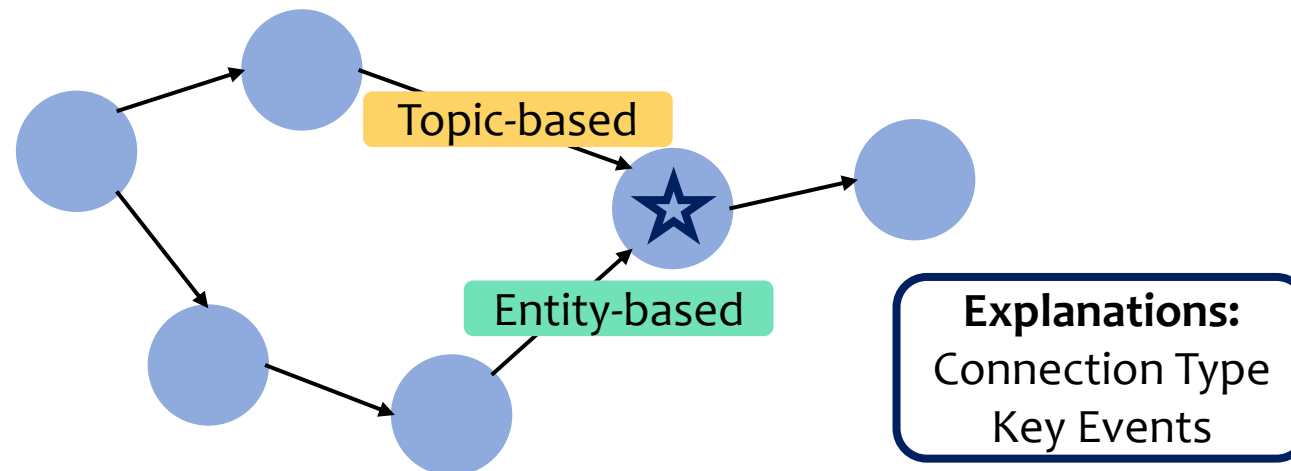


Explainable AI Components for

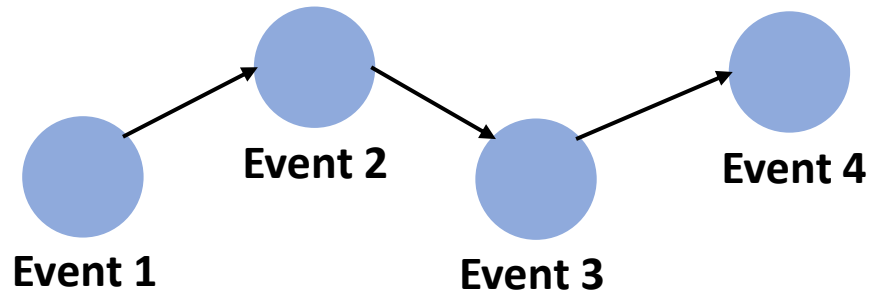
Narrative Map Extraction

Brian Keith, Fausto German, Eric Krokos,
Sarah Joseph, and Chris North



Problem Context

What are Narrative Maps?



Graph-based representations that capture connections between events in a narrative

The “Black Box” Problem



Users don’t understand why events are connected or how the narrative structure was determined

Our Challenge

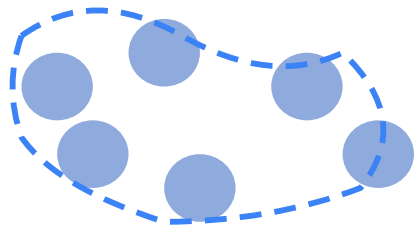
Provide meaningful explanations across multiple levels of abstraction to enhance human-AI collaboration.

Proposed XAI System Architecture

Multi-Level Explanation Approach

Low-Level

Document Relationships



Topical Clusters

- HDBSCAN + TF-IDF
- Keyword-based explanations
- UMAP visualization

Connections

Event Relationships

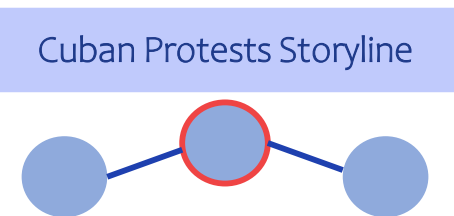


Connection Labels

- Type of connection (low or high level).
- Detailed explanations with SHAP values

High-Level

Narrative Structure



Storyline Names and Important Events

- Naming algorithm
- Content-based event importance
- Structural-based event importance

Evaluation & Results

- User study with 10 participants.
- Analyzed data set of the 2021 Cuban protests.
- Insight-based evaluation approach.

Responses (5-point Likert Scale)

1 ("Strongly Disagree") to 5 ("Strongly Agree")

(a) Overall Explanations								(b) Important Events							
	1	2	3	4	5	Mean	SD		1	2	3	4	5	Mean	SD
Trust	0	0	1	3	6	4.50	0.71	Relevance	0	0	1	5	4	4.30	0.67
Usefulness	0	0	1	5	4	4.30	0.67	Usefulness	0	0	2	4	4	4.20	0.79
(c) Storyline Names								(d) Connections							
	1	2	3	4	5	Mean	SD		1	2	3	4	5	Mean	SD
Correctness	1	4	1	2	2	3.00	1.41	Label Correctness	0	0	2	6	2	4.00	0.67
Relevance	1	0	4	1	4	3.70	1.34	Label Usefulness	0	1	3	5	1	3.60	0.84
Usefulness	0	1	2	5	2	3.80	0.92	Explanation Usefulness	0	0	1	7	2	4.10	0.57
								Comparison Usefulness	0	0	4	4	2	3.80	0.79

Key Insights

- Explanations significantly increased user trust.
- Connection explanations and important events were the most effective at building user confidence.

Conclusions

Key Contribution

Multi-level explanation framework that bridges low-level text processing and high-level narrative structures.

Practical Applications



Future Directions

- Causal explanations.
- Adaptive explanations based on user needs.
- Scalability improvements for larger narrative collections.
- Using LLMs to generate explanations.
- Integration with interactive narrative sensemaking tools.

Thank you!