Unsupervised Event Chain Mining from Multiple Documents

Introduction:

Event Chain Mining addresses the limitations of existing methods, especially in handling long-distance relationships and sequences across multiple documents. The paper highlights the integration of content and commonsense reasoning to achieve more accurate event ordering, acknowledging the significance of both explicit clues from content and implicit knowledge from commonsense.

EMiner Framework:

The EMiner framework comprises several key components:
1. Event Mention Extraction: Prioritizes complex patterns for more detailed event mentions without overlap.
2. Mention Merging: Hierarchical density-based clustering for grouping related mentions.
3. Salient Event Selection: Introduces a multi-document, multi-mention voting mechanism to enhance decision-making based on frequency and relevance.
4. Event Ordering: Leverages pre-trained language models for content-based ordering and formulates event ordering as a generation task for commonsense-based ordering.

Evaluation and Results:

The authors develop a benchmark dataset covering various news domains, conducting both automatic and human evaluations. EMiner outperforms baseline methods, demonstrating higher ERouge scores for precision, recall, and F1. Human evaluations indicate superior relevance, informativeness, and coherence compared to other approaches.

Ideas for Future Work:
The paper suggests avenues for future research:
1. Enhancing Commonsense Reasoning: Further improving the integration of commonsense reasoning to refine event ordering.
2. Domain Expansion: Exploring applications beyond news reports to evaluate EMiner's adaptability.
3. Addressing Long-Distance Relationships: Tackling challenges related to capturing and understanding long-distance relationships in events.

Conclusion:

In conclusion, EMiner proves to be a promising tool for mining meaningful event chains from unstructured texts, offering a nuanced understanding of temporal sequences. The combination of content and commonsense reasoning showcases its versatility and effectiveness. The reported results and future work suggestions open up exciting possibilities for advancements in event chain mining and its applications in diverse domains.