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Creating Real-Time Dynamic Knowledge Graphs
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Motivation

- Real world events are dynamic in nature
  - Recurring events e.g. US Presidential Election
  - Non-recurring events e.g. Hurricane Irma
- Need for real-time predictive analysis, trend analysis, public opinion analysis for events.
- Current state-of-the-art curates evolving knowledge graph from structured text but not from incoming real-time user generated unstructured text.

Contributions

- We address the changing nature of relationships between real-world entities during evolving events.
- We propose to create an evolving event-specific Dynamic Knowledge Graph (DKG) which is complementary to the static information in traditional knowledge graphs such as DBpedia, Freebase and YAGO.

Applications

- Question-answering systems: Query responses for temporally changing answers.
- Disaster response: Building a machine-understandable semi-structured knowledge repository that represents evolving situational awareness of events during a disaster response.
- Chatbots: DKG can provide a structured platform for the more accurate chatbot responses.

Overview

- Dynamic Knowledge Graph
  - Predictive Analysis
  - Trend Analysis
  - QA - Chatbots
  - Event-specific evolving fact identification
  - Event-specific schema design
  - Event-specific user data collection

Architecture

- Events: Specific Schema
  - Event-specific TWEETS
  - Entity Annotation
  - Entity type Annotation
- Schema Mapping
  - Schema
  - Synchronization
  - Similarity Computation
  - Coarsegrained mapping

Us Presidential Election Schema

Evaluation Criteria

- Social-Media Text
  - July 12 – Bernie Sanders endorses Hillary Clinton

We evaluate the performance of our approach with respect to the temporal facts associated with United States Presidential Election 2016 timeline article page from DBpedia.

References

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