

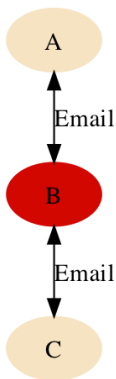
Automatic Detection and Classification of Social Events

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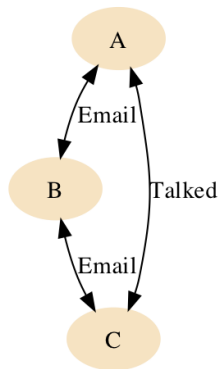
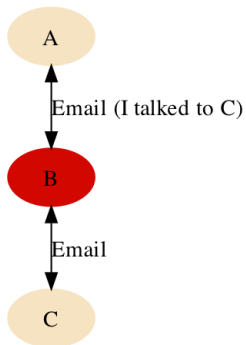
Overall Goal

Extract a social network from text where nodes are people and links are *social events*



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Social Event:(Agarwal et. al. 2010) An event between two people or group of people where at least one party is aware of the other party and aware of the event. Types:

- Interaction event (INR): both parties mutually aware
- Cognition event (COG): only one party aware of the other

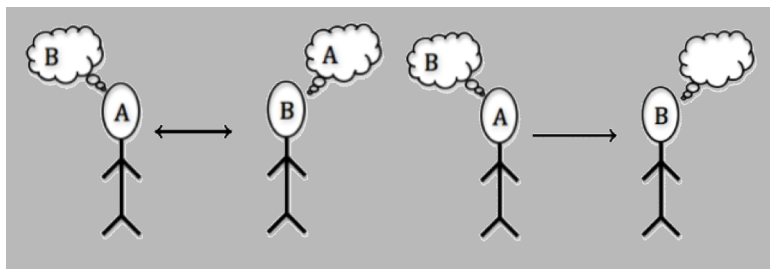
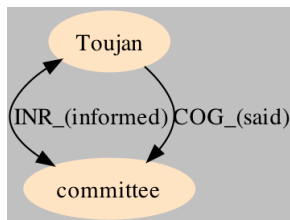
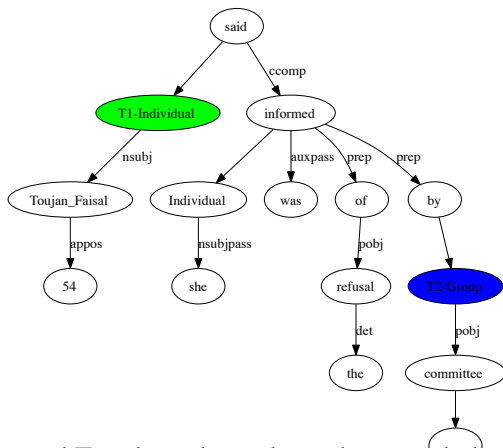


Figure: Interaction (INR) and Cognition (COG) social events respectively

- We annotated social events for part of Automatic Content Extraction (ACE) data
- ACE already has annotations for entities, relations and events but:
 - Our definition of social event is conceptually different from ACE since we require reasoning about cognitive states of people
 - *[Toujan Faisal], 54, {said} [she] was {informed} of the refusal by an [Interior Ministry committee] overseeing election preparations*



Convolution Kernels with SVMs



- Sequence and Tree kernels on dependency and phrase structure trees (Alessandro Moschitti and his research group)
- SqGRW: *Toujan_Faisal nsubj T1-Individual said ccomp informed prep by T2-Group pobj committee*

Experiments and Results

Experimental Set-up:

- 138 ACE documents: 172 INR, 174 COG, 1291 No relation classes
- SVM with kernels: 5-fold cross-validation

| Kernel | Event Detection (% F1) | | | | Classification |
|---------------------|------------------------|-------|-------------|-------|----------------|
| | Baseline | Under | Over | Over+ | % Acc |
| PET_GR | 38.9 | 48.5 | 60.6 | 54.7 | 76.3 |
| PET_GR_SqGRW | 38.0 | 48.5 | 61.1 | 55.7 | 78.7 |
| GR_SqGRW | 36.2 | 47.3 | 54.5 | 54.0 | 75.6 |
| GRW_SqGRW | 25.0 | 47.1 | 54.1 | 55.3 | 76.9 |
| GR_GRW_SqGRW | 32.6 | 46.8 | 56.5 | 55.7 | 77.3 |

- Event detection is harder than event classification
- Combination of structures derived from phrase structure trees and dependency trees work best
- SqGRW plays a role in both best performing system