From Sentiment Analysis to Preference Aggregation

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What is the collective sentiment about ... ?

...Torino

Sentiment140

Tweets about: Torino

KissUtama: @ADP1113 Juve wins vs Verona, Torino, Parma, Napoli, Livorno, Udinese were won by goals of Llorente & Pogba. It’s 15 pts
Posted: 3 minutes ago

IoTNet: Corso Grosseto (Torino), Traffic Counter - TrafficFlow: 16 vehicle/min #iotnet
Posted: 5 minutes ago

Posted: 51 minutes ago

dgordonUKmusic: Torino! great food, wine & great folks. Bringing love & I hope the right shoes, come check me out 9-day tour Milano http://t.co/68XynL8dLV
Posted: 63 minutes ago
Aggregation of individual polarities

Collective sentiment

40%
60%
A Problem: Multiple Alternatives

If preferences are as follows:

21 voters  \(a\ b\)  
10 voters  \(b\ a\)  
4 voters  \(a\ b\)

Sentiment analysis: blue!

Preference aggregation: red!
Challenge 1

What preferences/opinions can be extracted from text?

- Partial scores: 4.5
- Binary comparisons: -3
- 5-star ratings:
Challenge 2

How to represent (compactly) the information extracted?

1. Interpersonal incomparability
2. Incompleteness
Challenge 3

How to aggregate the individual information into a collective opinion?
Challenge 4

Is it possible to identify influencers and prevent strategic behaviour?
Challenge 5

How should preference methods be validated?

Against real events (predictive ability)

Axiomatically (Social Choice Theory)
Challenge 6

How to deal with big data in sentiment/preference analysis?
• Challenge I: what to extract?
• Challenge II: compact representation
• Challenge III: aggregation
• Challenge IV: strategic behaviour
• Challenge V: validation
• Challenge VI: big data