

From Sentiment Analysis to Preference Aggregation

Umberto Grandi, Andrea Loreggia,
Francesca Rossi and Vijay Saraswat

University of Padova and IBM TJ Watson Research Center

What is the collective sentiment about ... ?

...Torino

Sentiment140

Tweet 678

Like 543

+1 157

Torino

English

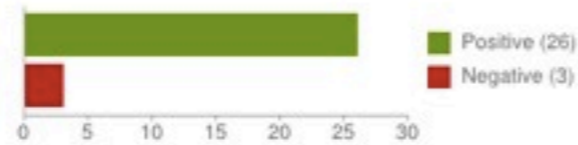
Search

Sentiment analysis for Torino

Sentiment by Percent



Sentiment by Count



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

GotVtgFashion: 20 Vintage Pins Destash Lot / Trifari Giovanni Coventry **Torino** plus unsigned/ 1950s-1970s <http://t.co/PIynV9FcPv>

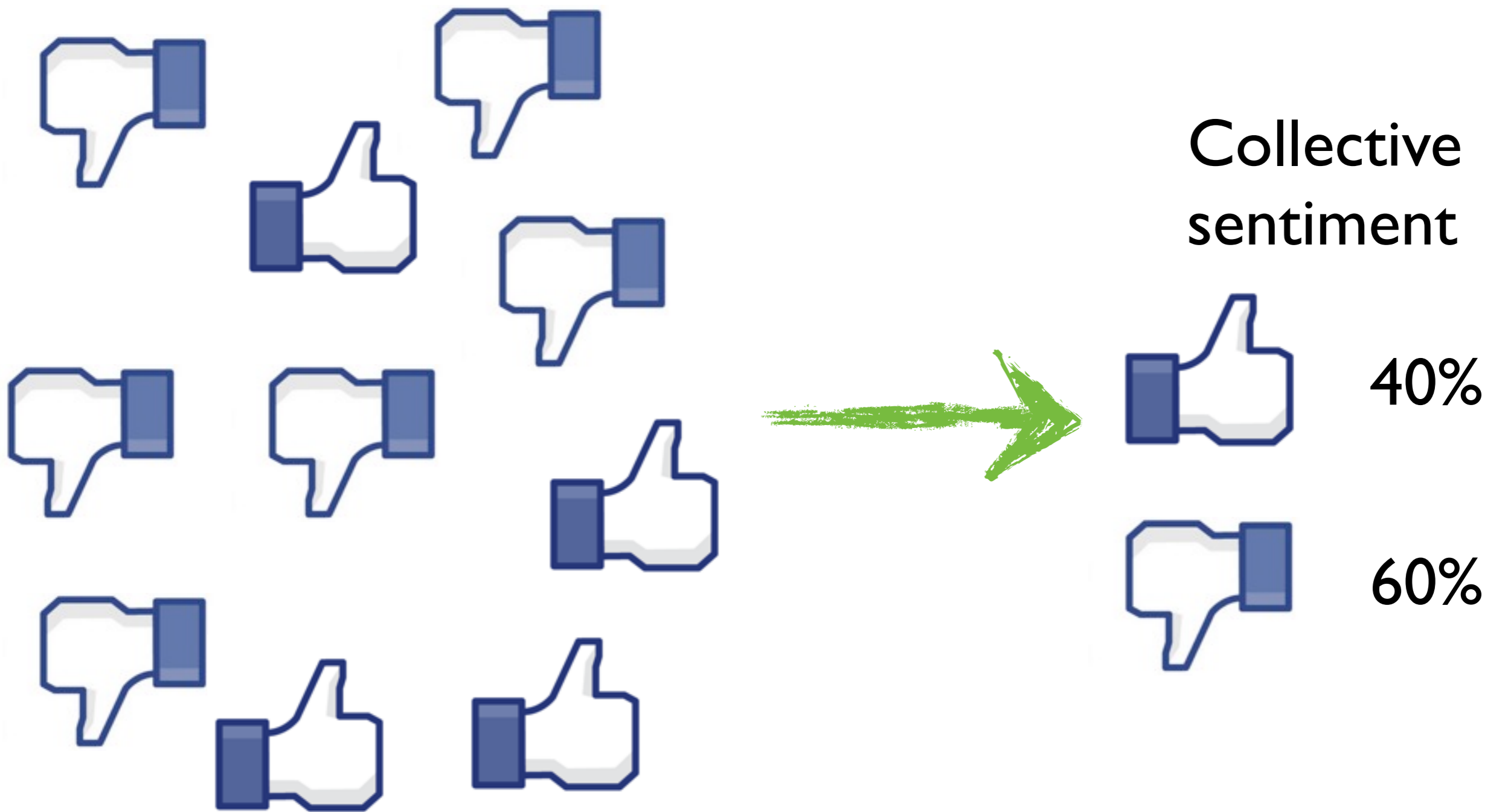
Posted: 51 minutes ago

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/c69Xynl18dV>

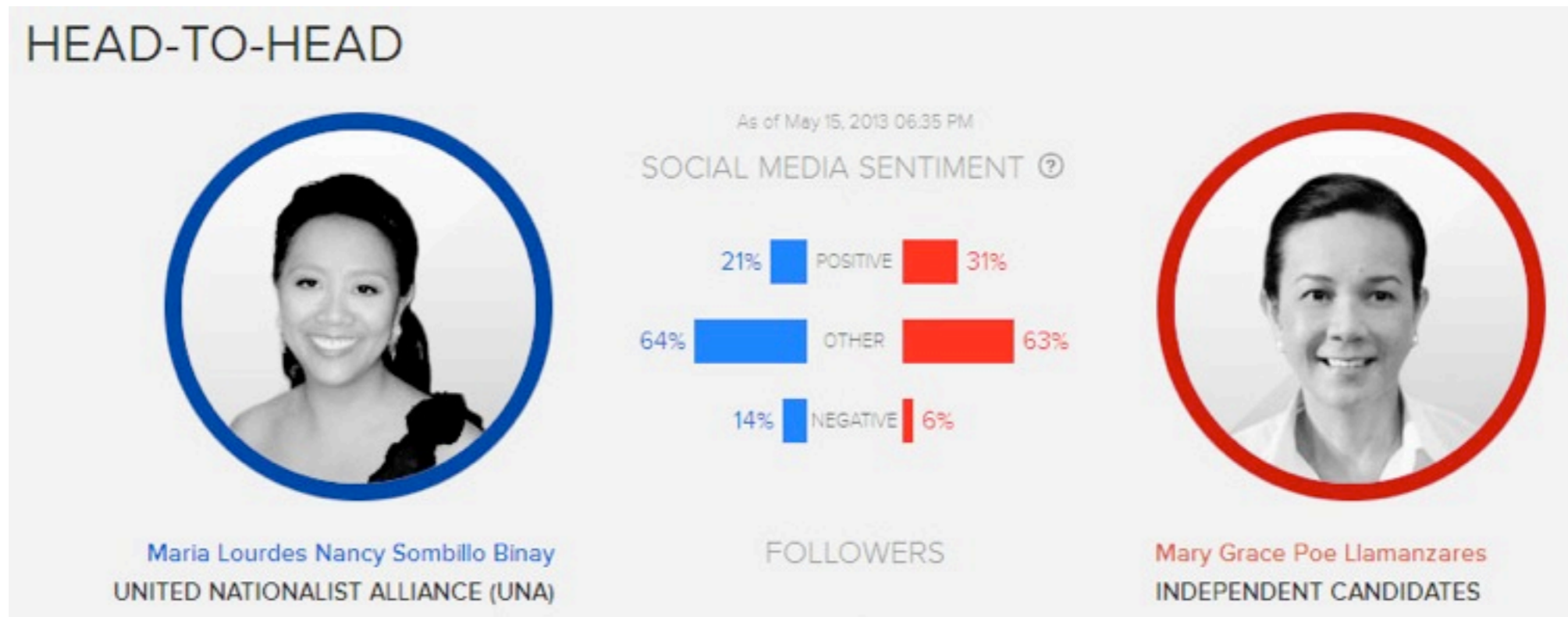
Posted: 52 minutes ago

The results for this query are: Accurate Inaccurate

Aggregation of individual polarities



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 I

What preferences/opinions can be extracted from text?

partial scores



4.5

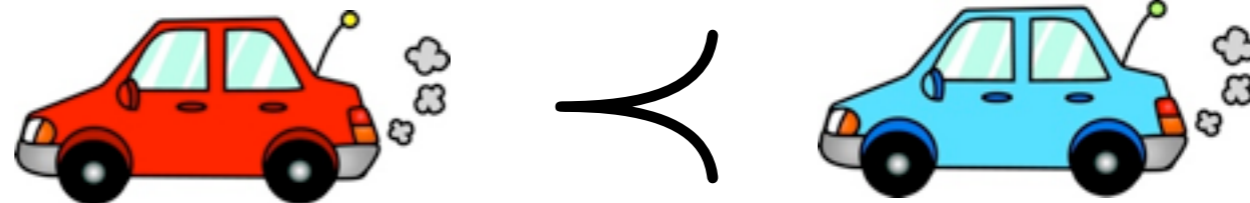
5-star ratings



binary comparisons



-3



Challenge 2

How to represent (compactly)
the information extracted?

1

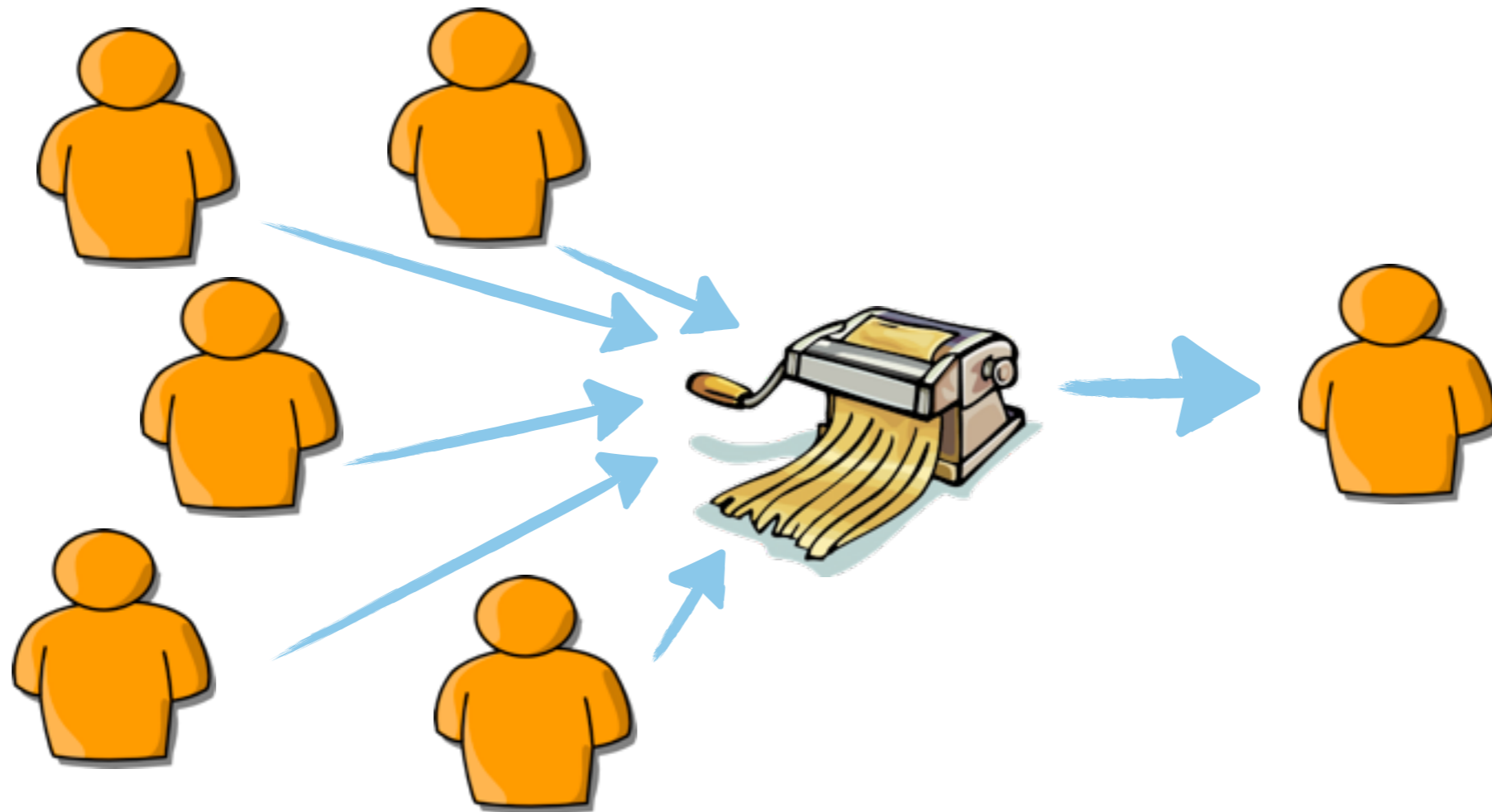
Interpersonal
incomparability

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?

GET GUARANTEED TWITTER FOLLOWERS NOW
100% MONEY BACK GUARANTEE!

Quantity	Price	Delivery Time
5,000 Twitter Followers	\$77	Delivered within 12 to 20 Days
2,000 Twitter Followers	\$32	Delivered within 7 to 9 Days
1,000 Twitter Followers (Limited Time Offer)	\$17	Delivered within 4 to 7 Days
10,000 Twitter Followers	\$127	Delivered within 20 to 30 Days
25,000 Twitter Followers	\$247	Delivered within 30 to 40 Days

Try it now

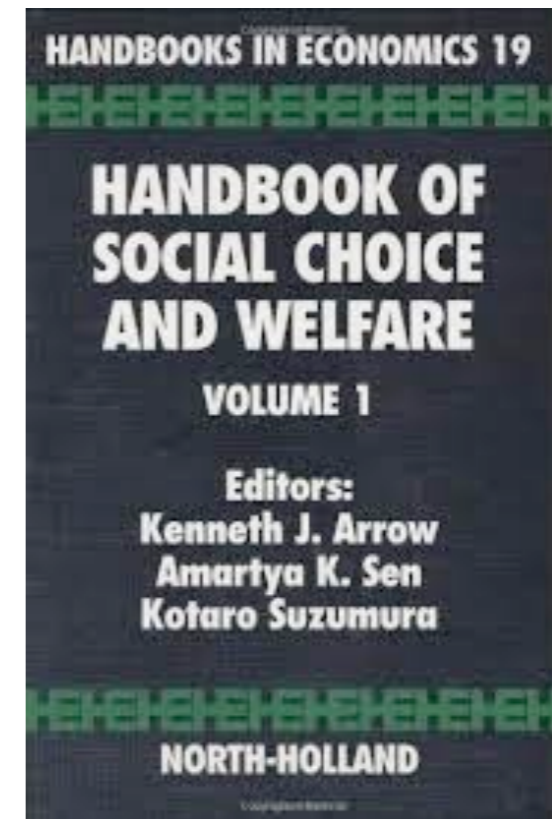
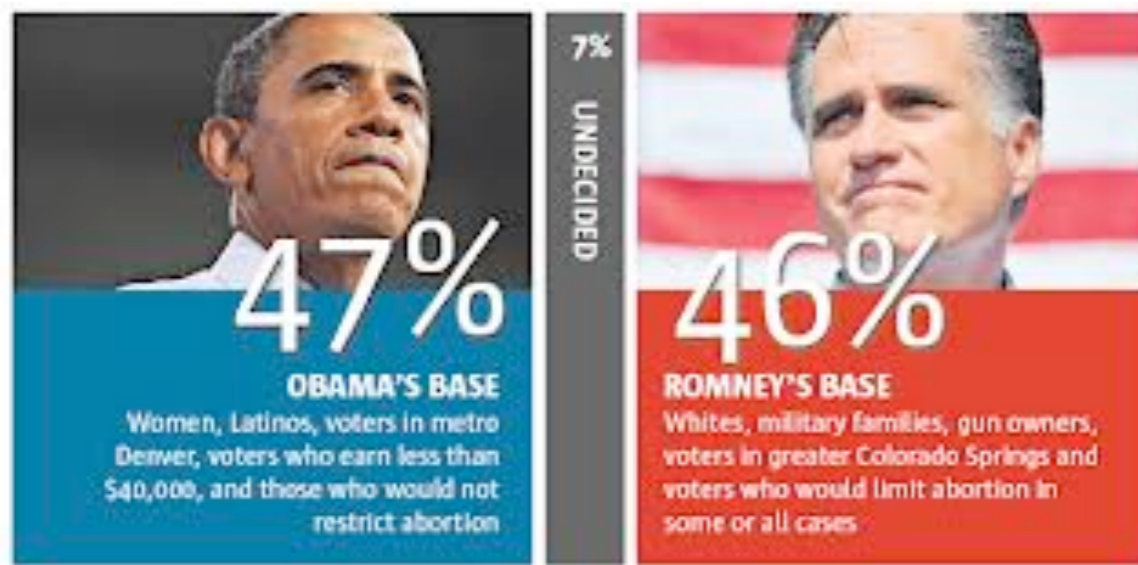
We don't require your Twitter password

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?

The screenshot displays the X10 website interface. At the top, the title "X10: Performance and Productivity at Scale" is visible next to a search bar. Below the title is a horizontal navigation menu with items: X10, Documentation, Downloads, X10 Community, X10 Development, X10 Workshops, and Feedback. The main content area features a large banner for "Productivity" with the text "X10 provides Java-like productivity with Java or C++ Interoperability". To the right of the banner are three smaller sections: "Performance", "Productivity", and "Scale". On the far right, there is a sidebar titled "X10 Resources" containing a list of links: "Upcoming X10 Events", "Download X10", "An Introduction to X10", "Language Specification", "X10 in the News", "X10 Workshops", and "Mailing Lists". Below the main content, there is a section titled "The latest news about X10." which contains a paragraph about the release of ScaleGraph 2.1 and a bulleted list of features: "XPregel - a framework for Pregel computational model", "Degree Distribution", and "Page Rank".

Thank you!

- Challenge I: what to extract?
- Challenge II: compact representation
- Challenge III: aggregation
- Challenge IV: strategic behaviour
- Challenge V: validation
- Challenge VI: big data