Large scale information extraction and integration infrastructure for supporting financial decision making.

Twitter Sentiment in Financial Domain

Miha Grčar (Department of Knowledge Technologies, Jožef Stefan Institute) & FIRST Consortium
• Platform for sending short messages to people (similar to SMS)
Twitter

First FP7 Project
@projectfirst
EU FP7 project providing a large-scale online financial data acquisition, analysis and financial decision support models based on high-level features
http://project.first.eu

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Tweets
First FP7 Project @projectfirst
@projectfirst workshop bit.ly/6BrPL at the ABI LAB 2012 forum in Milan, March 29. More on sentiment analysis in the financial domain

Diana Pottecher @dpottecher
Computational Finance White paper from @Atos where @projectfirst is mentioned bit.ly/uM4k5g

FIRST Workshop
Twitter

- Platform for sending short messages to people (similar to SMS)
- Est. 225 million users
- 100 million accounts added in 2010
- 65 million tweets per day
- Accessible from practically anywhere
• When M.J. died, 456 tweets per second (TPS) were generated
• ~10,000 TPS when S.J. died
• Record: 25,088 TPS when screening “Castle in the Sky” in Japan (December 2010)
Informal $ sign convention

Some examples (March 19):

- **User#1**: $AAPL is making an announcement at 9am on what it plans to do with its 97 billion in cash. We expect a dividend announcement.

- **User#2**: $AAPL over 600.00 a share in the pre-market on news of a dividend.

- **User#3**: Will there be any other news besides $AAPL dividend?

We acquire ~13,000 tweets per weekday, for ~1,800 NASDAQ/NYSE stocks ($GOOG, $MSFT…)

We analyze tweets to determine whether they contain positive or negative vocabulary.
Twitter Sentiment Analysis

Keyword(s): Seur

Sentiment Percentages:
- Positive: 55.3%
- Negative: 44.7%

Recent Tweets Statistics:
- Non-English: 0
- Near-Duplicates: 25
- Clean: 50
- Total: 75

Tweets:

DangerousBeans7: RT @TradersLog: EUR/USD Weekly Summary http://t.co/pEHOvA7X #mkt $EUR
Posted 4 hours ago

TradersLog: EUR/USD Weekly Summary http://t.co/pEHOvA7X #mkt $EUR
Posted 5 hours ago

Demo video
Positives, negatives, and difference volume graph

Netflix sentiment analysis
Closing price vs. positive/negative tweets volume

- Positives
- Negatives
- Difference
- Closing stock price
- News
Blue: The number of positive tweets
Red: The number of negative tweets
Yellow: The difference between the positive and negative tweets
Green dots: Relevant events concerning Netflix
Grey: Netflix stock closing price
Positives, negatives, and difference volume graph

Netflix sentiment analysis
Closing price vs. positive/negative tweets volume

- Positives
- Negatives
- Difference
- Closing stock price
- News

CLOSING PRICE

Positive/Negative/Difference Volume

<table>
<thead>
<tr>
<th>Month</th>
<th>Closing Price</th>
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<tbody>
<tr>
<td>Apr '11</td>
<td>200</td>
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<tr>
<td>May '11</td>
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<tr>
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<td>250</td>
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<td>275</td>
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<td>Nov '11</td>
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</tr>
<tr>
<td>Dec '11</td>
<td>400</td>
</tr>
</tbody>
</table>
Positives, negatives, and difference volume graph

First-quarter earnings release
Plans to launch in 43 countries in Latin America and the Caribbean
Volume peaks likely represent important events.
Netflix loses TV shows and films, Netflix loses the Starz deal
Positives, negatives, and difference volume graph

Netflix sentiment analysis
Closing price vs. positive/negative tweets volume

Sentiment cross-over
Sentiment cross-over happens before price plunge.
To Recap

- On Twitter, people are expressing opinions/sentiments about stocks
- We acquire stock-related tweets and analyze them to determine whether they contain positive or negative vocabulary (sentiment)
- “Sentiment timeline” allows us to observe sentiment trends through time
- Preliminary causality tests are “positive”…
Acknowledgement

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THANKS 😊