TUMS – Twitter User Modeling Service

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Web Information Systems
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Who is this? What are his personal demands? How can we make him happy?

Name: John van Bommel
Age: 49
Hometown: London
Hobbies: rowing, music

Listened to Jamie Cullum
Listened to Nils Wuelker

I agree with @bluebird23. This is an #epicfail?
How can we solve the problem?

- Personalization
- Analysis and User Modeling
- Semantic Enrichment, Linkage, Alignment

News Article Recommendations in time:

Ajax gives De Jong a break
Ajax manager Frank de Boer announced that...

Nice, thank you!

TUMS – Twitter User Modeling Service
Here we give the solution!

TUMS – Twitter-based User Modeling Service for the Social Semantic Web
TUMS pipeline

1. Crawling

2. Enrichment

3. Linkage and Further Enrichment

4. User Modeling
TUMS pipeline - Crawling

1. Observing tweets
2. Crawling the linked web pages
3. Extract the main contents of the web pages
TUMS pipeline - Enrichment

Francesca Schiavone is great!

Thirty in women's tennis is primordially old, an age when agility and desire recedes as the next wave of younger/faster/stronger players encroaches. It's uncommon for any athlete to have a breakthrough season at 30, but it's exceedingly...

1. Entities extraction
2. Topic detection


dbpedia:Schiavone
dbpedia:Schiavone
topic:Tennis
event:FrenchOpen
oc:Sports
Francesca Schiavone is sportsman of the year #sport #tennis


SI Sportsman of the year: Surprise French Open champ Francesca Schiavone

Thirty in women's tennis is primordially old, an age when agility and desire recedes as the next wave of younger/faster/stronger players encroaches. It’s uncommon for any athlete to have a breakthrough season at 30, but it's exceedingly...

Olympic champion and world number nine Elena Dementieva announced her retirement

The 29-year-old Russian delivered the shock news after losing to Francesca Schiavone in the group stages of the season-ending tournament...
Thirty in women's tennis is primordially old, an age when agility and desire recedes as the next wave of younger/faster/stronger players encroaches. It's uncommon for any athlete to have a breakthrough season at 30, but it's exceedingly...
1. Profile type
   1) hashtag-based
   2) topic-based
   3) entity-based

2. Weighting schemes
   1) term frequency (TF)
   2) TF \times IDF

3. Enrichment
   1) tweet-only based
   2) tweet + news based

4. Temporal constraints
   1) specific time periods
   2) temporal patterns (weekend, night, etc.)
   3) no constraints
<rdf:RDF>
  xmlns:rdf="http://www.w3.org/1999/02/22-rdf-syntax-ns#"
  xmlns:rdfs="http://www.w3.org/2000/01/rdf-schema#"
  xmlns:foaf="http://xmlns.com/foaf/0.1/"
  xmlns:wi="http://purl.org/ontology/wi/core#"
  xmlns:wo="http://purl.org/ontology/wo/core#"
  xmlns:tums="http://wis.ewi.tudelft.nl/rdf/tums.rdf#">

  <foaf:Person rdf:about="http://twitter.com/BARACKOBAMA">
    <foaf:name>Barack Obama</foaf:name>
    <wi:preference>
      <wi:WeightedInterest>
        <wo:weight>
          <wo:Weight>
            <wo:weight_value rdf:datatype="xsd:double">0.7073170731707317</wo:weight_value>
          <wo:scale rdf:resource="&tums;Scale"/>
        </wo:Weight>
      </wi:WeightedInterest>
    </wi:preference>
  </foaf:Person>
</rdf:RDF>
TUMS output

FOAF-based profile
Using Weighted Interests
& Weighting Ontology
Game time 😊
Game time – Who is this?
Game time – Who is this?

America

Politics
Health_Medical...
Social Issues
Entertainment_C...
Business_Finance
Other
Labor
Education
Environment
Disaster_Accident
Human Interest
Religion_Belief
Sports

12.7%
11.6%
10.8%
10.5%
9.7%
8.9%
8.7%
8.5%
8.3%
8.1%
7.9%
7.7%
7.5%
7.3%
7.1%
6.9%
6.7%
6.5%
6.3%
6.1%
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1.5%
1.3%
1.1%
0.9%
0.7%
0.5%
0.3%
0.1%
0.0%

United States
Washington
White House

President
Prime Minister
Reid
Robert Gibbs
Ronald H. Brown
United States Mission
Santiago

Schenectady
Shared Prosperity town hall
St. Patrick's Day
State of the Union
Stephanie Cutter
Sudan
TechBison Academy
Texas
Thanking police
Tucson
U.S. Chamber of Commerce
USD
United Nations
United Nations Building
White House

energy sources
river
editor
electricity
ENERGY
energy security
gas prices
high-speed Internet
insurance
insurance industry
moving forward
mp
oil
oil production
press
secretary
secretary general
and the president
teaching

TUMS – Twitter User Modeling Service
TUMS features at a glance

1. Easy to start: twitter username

2. RDF Endpoint for twitter-based UM Profile

3. GUI: human-understandable profile can also be provided
Thank you!

http://wis.ewi.tudelft.nl/