Twitter Boost App

Advanced Software Services

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Context

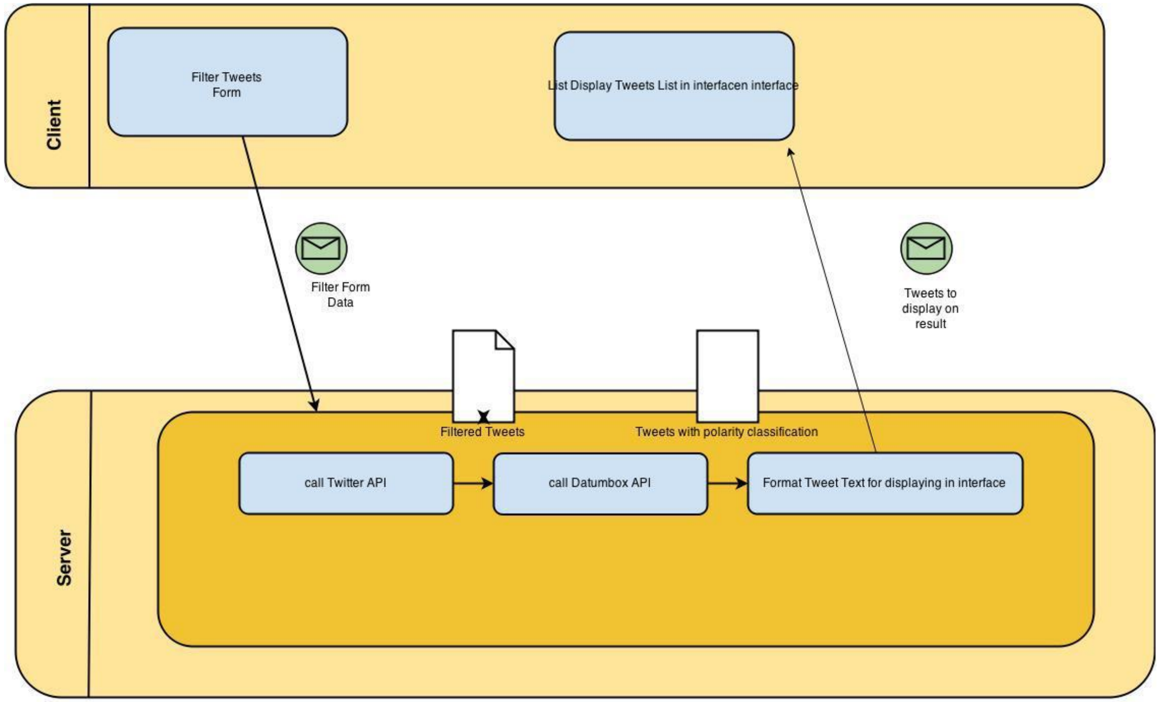
- Social media today
  - A second reality
  - Keeps people in touch with online news and information of personal interest
    - Downside:
      - Use is overwhelmed by the extremely large flow on information
    - Objective:
      - Allow users to keep track of particular pieces of information

Proposal: Twitter Boost App

- Web application
  - Integrates Twitter API
  - No Twitter account required
  - Advanced filtering of tweets
  - Allows saving filter groups for ulterior easy retrieval of tweets

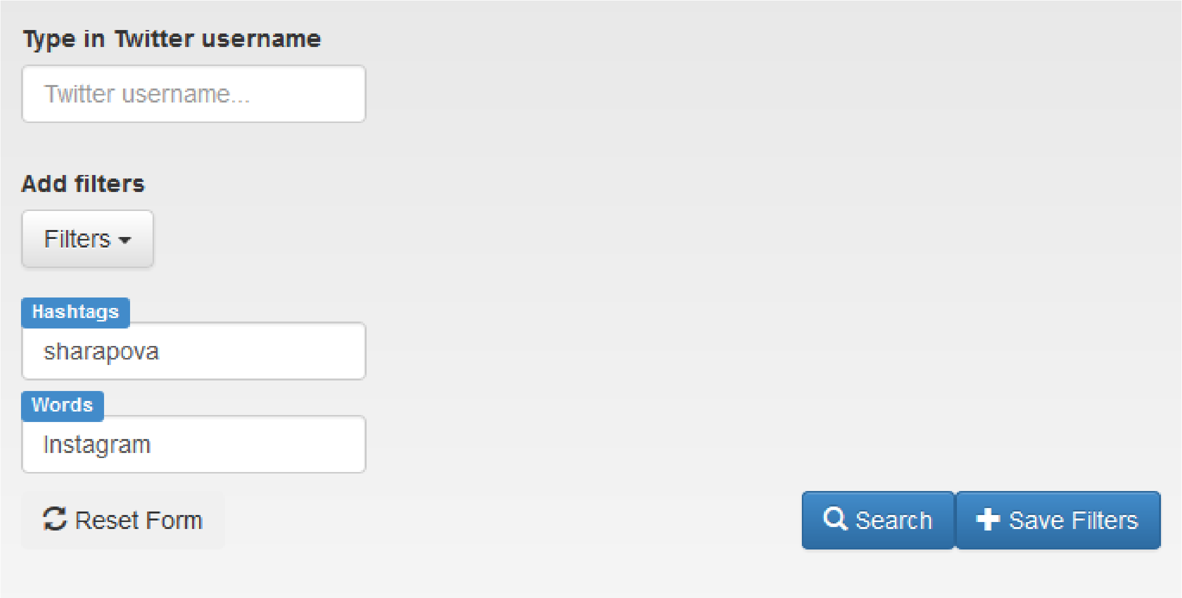
Architecture

- **Backend**
  - Spring
  - Hibernate
  - Liquibase
  - Twitter4J
  - Datumbox
- **Frontend**
  - AngularJS
  - HTML, CSS
  - Bootstrap


Client
Filter Tweets Form
List Display Tweets List in interfacen interface
Filter Form Data
Tweets to display on result
Filtered Tweets
Tweets with polarity classification
call Twitter API
call Datumbox API
Format Tweet Text for displaying in interface
Server

Architecture – Tweet Filtering

- Filters available in the interface
  - HASHTAGS
  - REFERENCES
  - WORDS
  - TWITTER USER



Type in Twitter username

Twitter username...

Add filters

Hashtags: sharapova

Words: Instagram

Architecture – Sentiment Analysis

- ~ Opinion mining
  - **Def**: Extract subjective information from text or oral communication
  - **Goal**: determine the attitude of a speaker of a writer regarding some topic or in general
  - **Result**:
    - Assign a polarity to a piece of writing.
    - A possible classification for text is the following: *positive, negative, neutral*
- The application uses sentiment analysis on tweets and classifies content as *positive, negative or neutral*

Technologies

- **Spring**
  - Framework that offers rich high-level Java development environment that allows a large area of server issues to be handled
  - Root of the backend architecture and configuration of the application through use of Spring MVC, Spring security, Object Relational Mapping framework Hibernate (ORM) integration.

Technologies

- **Angular**
  - JavaScript framework
    - Provides ways for extending HTML vocabulary
    - Quick to develop
    - Expressive and readable environment
    - Daynamic generation of the DOM given the logic in code
    - Single-Page application

Technologies

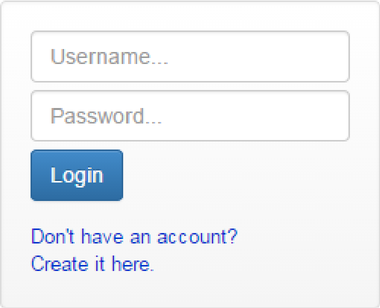
- **Liquibase**
  - Database-independent library
  - In-memory database
  - Easier tracking of database changes
    - XML Config file for changes (each change has an id and author)

Implementation

- **Authentication and authorization**
  - Spring Security
  - Access allowed only to registered users
    - Unique username restriction at registration
    - User data is stored in the database
  - Application’s core page is protected from unauthenticated access attempts

Implementation

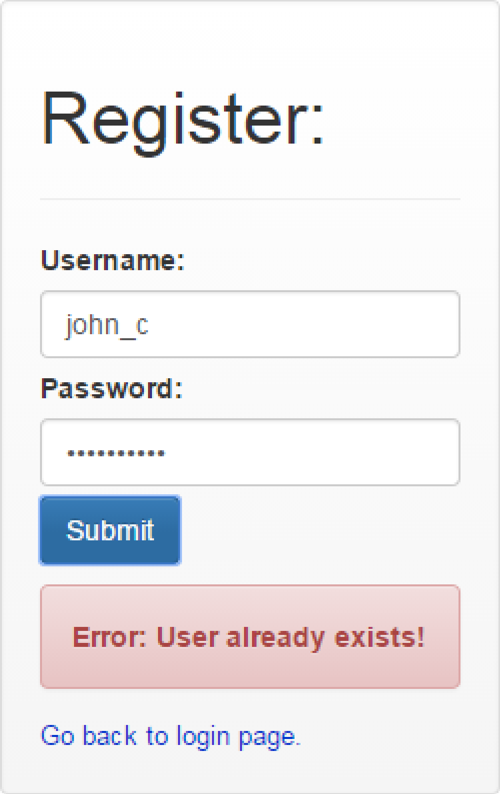
- **Authentication and authorization**
  - Login and register forms available in the application


Username...

Password...

Login

Don't have an account?
Create it here.


Register:

Username:

john_c

Password:

••••••••••

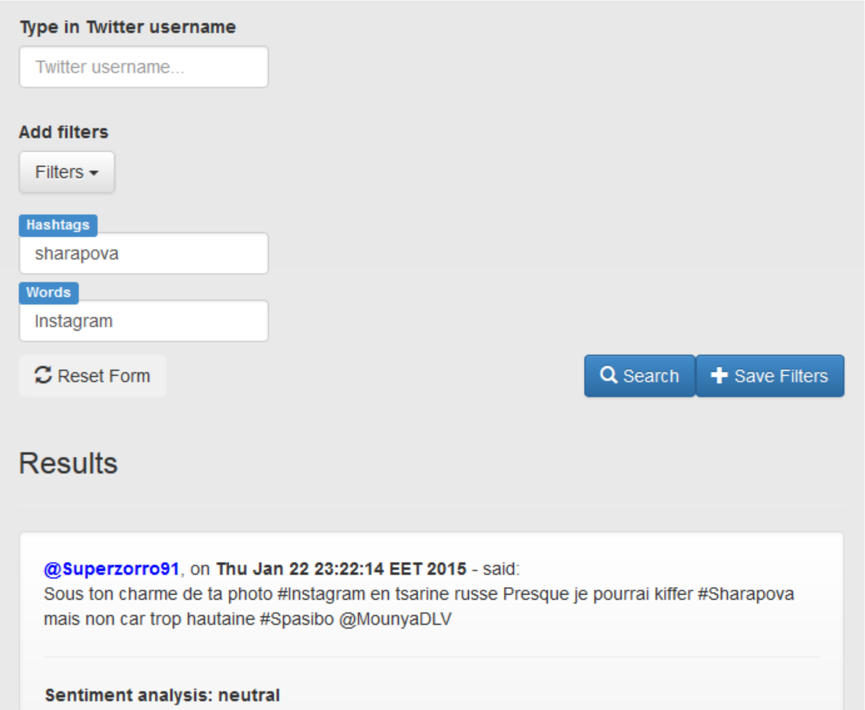
Submit

Error: User already exists!

Go back to login page.

Implementation

- **Tweets Search**
  - **Twitter4j**
    - Unofficial Java library for the Twitter API
    - Provides easy integration with Twitter service
    - Used for handling tweet search requests with custom filters



Type in Twitter username

Add filters

Hashtags: sharapova

Words: Instagram

Results

@Superzorro91, on Thu Jan 22 23:22:14 EET 2015 - said:
Sous ton charme de ta photo #Instagram en tsarine russe Presque je pourrai kiffer #Sharapova mais non car trop hautaine #Spasibo @MounyaDLV

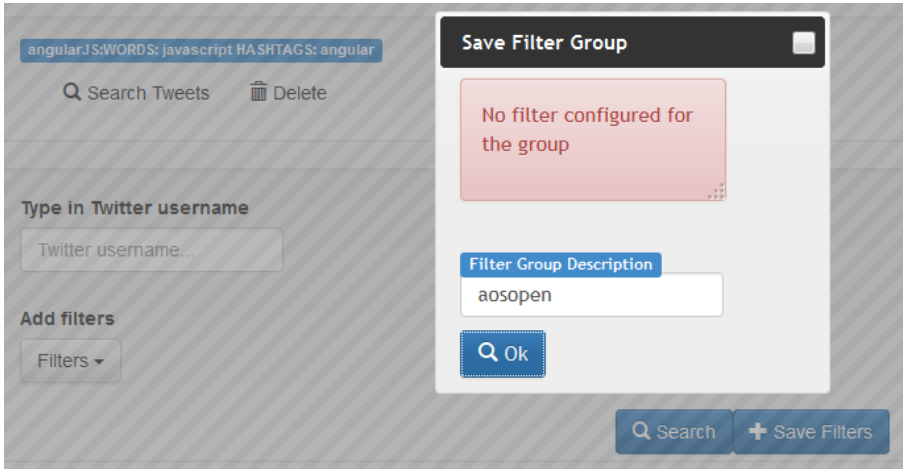
Sentiment analysis: neutral

Implementation

- **Save Filter Groups**
  - Groups of filters are persisted in the database along with a short description
  - Database schema:
    - FILTER GROUP PREFERENCES with columns:
      - USER ID and FILTER GROUP DESCRIPTION
      - SAVED FILTERS with columns FILTER GROUP ID,
      - FILTER CATEGORY, FILTER CONTENT

Implementation

- **Save Filter Groups**
  - Each saved filter group can be used for later easier tweet retrieval based on preffered filters
  - User can delete a saved filter group



angularJS:WORDS: javascript HASHTAGS: angular

Save Filter Group

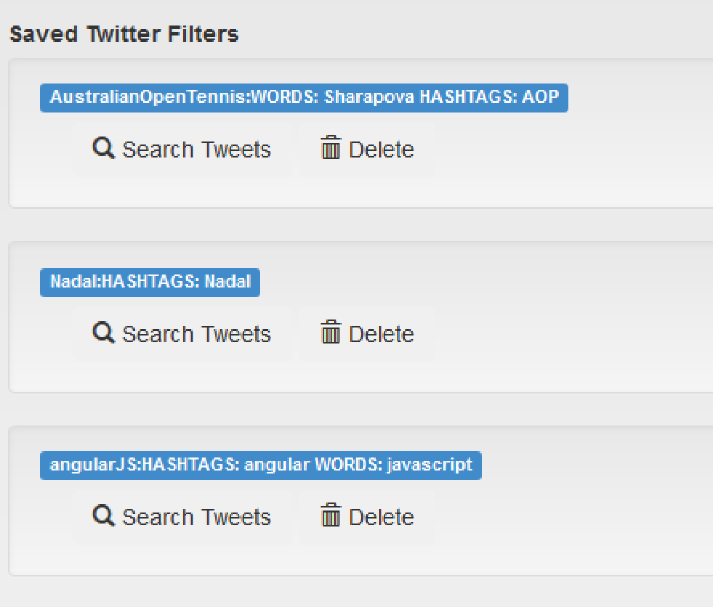
No filter configured for the group

Type in Twitter username

Twitter username...

Add filters

Filter Group Description: aosopen



Saved Twitter Filters

AustralianOpenTennis:WORDS: Sharapova HASHTAGS: AOP

Nadal:HASHTAGS: Nadal

angularJS:HASHTAGS: angular WORDS: javascript

Sentiment Analysis

- **Sentiment Analysis**
  - **Datumbox API**
    - Public service performing text analysis based in machine learning algorithms
      - REST API
      - Request URL: http://api.datumbox.com/1.0/TwitterSentimentAnalysis.json
      - **Result**: JSON with classification result
    - Requires singing up for API key

Conclusions

- Growing interest of developers in integrating theTwitter API

- Many applications require the user to actually have a Twitter account and login with it.
  - Our application bypasses this restriction and allows user to get access to public tweets in the absence of a Twitter account.

- The user creates a new account, managed by our application, and then enjoys a **personalized** interrogation of tweets based on saved favorite groups of filters.

Questions?