Solving Big Data Problems with Reactor

Module Objectives

- Introducing a Big Data Problem: Realtime geo-sentiment analysis of social media
- Solving it using Continuuity Reactor
- Problems of alternative solutions

Introducing a Big Data Problem 1/3

Why: Companies want to know what is happening in realtime

- What are people saying about them?
- What are people saying about their products?
- How are these sentiments changing over time?
- How are these sentiments different in different parts of a country?
- Understand more about their brand, product, issues and campaigns

A large company launches a new mobile phone product, and wants to know:

- What are people in New York thinking about it?
- What are people in Seattle tweeting about it?
- What did people say yesterday about it? This morning?

Introducing a Big Data Problem 2/3

What:

One approach is **Geo-Sentiment analysis of social media data**

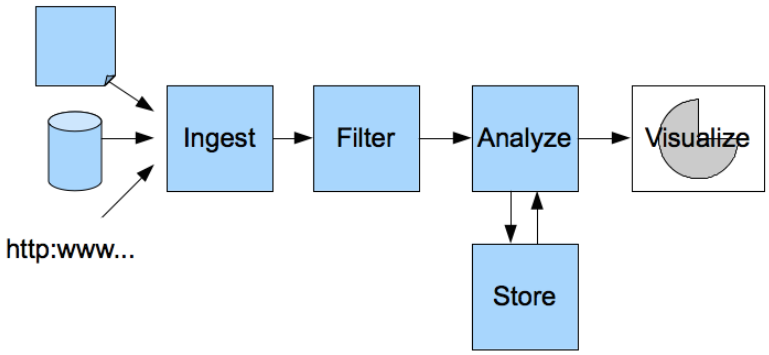
- Primary source for data is Twitter Firehose
- Additional possible data sources
    - Call Detail Records
    - Wireless Network Traces and Logs
    - Other Social Networks
- Challenging problem
    - Large volumes of data: 5K average / 30K peak tweets per second
    - Realtime results required: answers a day later aren't useful

---

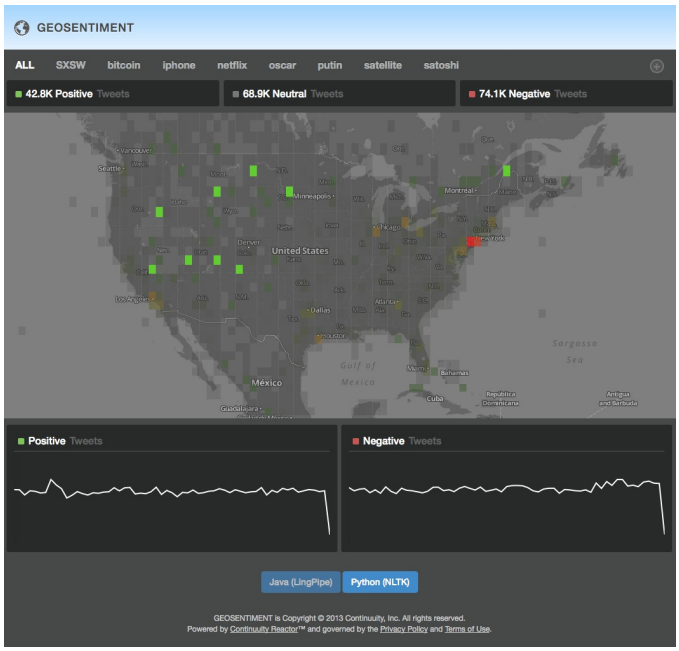
Introducing a Big Data Problem 3/3

How: Hadoop/HBase is at the core of Big Data reference architecture

- Ingest social media data from different sources
- Ingest both in realtime and batch modes
- Select and store tweets based on a filter
- Analyze tweets and calculate sentiments
- Store calculated results with geo-information
- Visualize results



Continuuity Reactor *Geo-sentiment*



A web user interface

- Displays the tweet sentiments on a map
- With counts over time

Continuuity Reactor *Geo-sentiment*

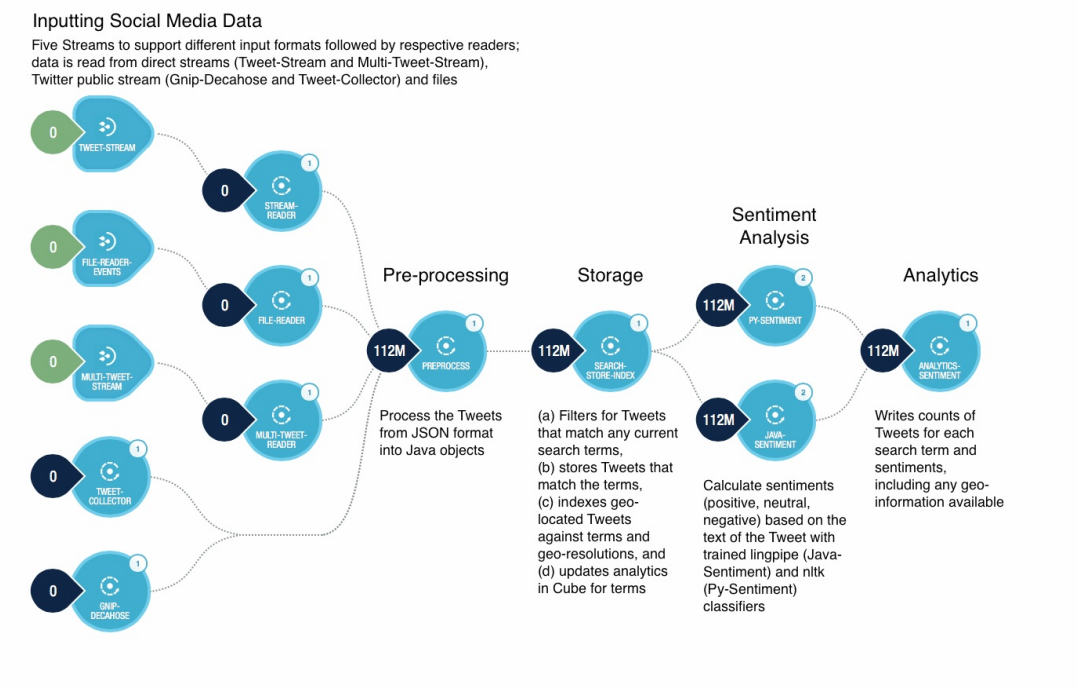
- An application for sentiment analysis of Twitter data
- Built on Continuuity Reactor
- Supports realtime processing of data at large volumes
- Incorporates geographic information by determining the relative sentiment of tweets in each area
- Data is persisted in a Hadoop-based system
- Permits time and geolocation of specific queries
- Actionable analytics: based on time-frames, geographic regions and keywords

Continuuity Reactor *Geo-sentiment*

- Input through numerous sources
    - GNIP Decahose API stream
    - Twitter API public stream
    - File input
- Sentiment analysis
    - External natural language toolkit
    - Pluggable and customizable
- Term tracking
    - Users specify terms that they want the application to track
    - Tweets containing these terms are aggregated and summarized in the results
- Geolocation-based queries
    - Identify the relative sentiment
    - Identify the tweet count in user-defined geographic coordinate ranges
- Historical searches: time-based searches on previously tracked terms

---

Continuuity Reactor *Geo-sentiment*



Geo-sentiment as seen in the Continuuity Reactor *Dashboard*

How Continuuity Reactor Helps

- Supports realtime processing of data at large volumes
- Data is persisted in a Hadoop-based system on commodity hardware
- Integrated framework for the creation of applications
- Provides simple, powerful APIs to access and process data
- Full support for the development lifecycle, from development to production
- Eases of application operation

Without Continuuity Reactor

- Large number of questions to answer before deciding which technologies to use
- Numerous technologies to learn and master as part of the process
- Increasing concerns in both application and infrastructure areas
- Deep integration required between various distributed systems
- Long time required to develop the application
- Limited development tools for application development lifecycle
- Harder to integrate into CI

Module Summary

You've now:

- Looked at a Big Data problem: geo-sentiment analysis of social media
- Considered a Continuuity Reactor solution
- Examined difficulties of alternative solutions

Module Completed