

# An empirical study of social listening in disaster reduction and emergency management

Willie Yang, Ph. D.

Assistant Professor, Dept. of Business Administration, National Taiwan University

Managing Director, OpView Team / eLand Technologies Corporation

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# Background

2011.03.11

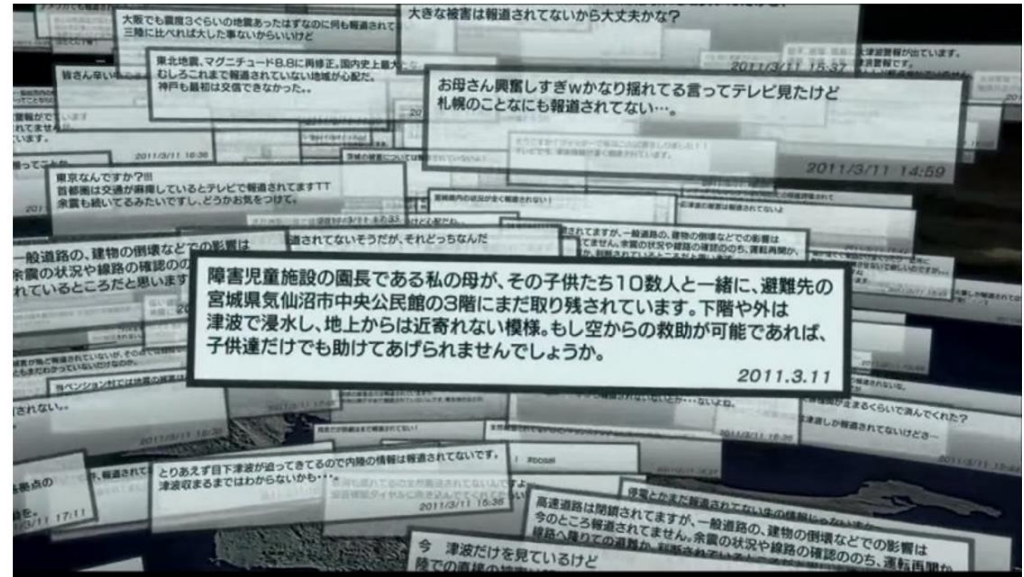
## Earthquake and Tsunami Tohoku, Japan



Source: [www.storm.mg/lifestyle/85435](http://www.storm.mg/lifestyle/85435)

“it could be very helpful if a system specializing in collecting relevant disaster posts from the internet could be developed”, some experts said.

地震過後有一篇推特文章在網路世界廣傳，這篇推文寫著：「我的母親在一間身障兒童照護機構工作，她和那些孩童被困在氣仙沼市的社區中心，有人能至少把孩子救出來嗎？」



(圖/PTS 台灣公共電視@youtube)

推特是日本人最常使用的社交網站之一，這間兒童照護中心的主任內海直子和孩童被困在社區中心，她寄出一封電子郵件向住在倫敦的兒子求救，她兒子在推特上發布了這個消息，成功獲得網民的關注，文章被大量分享，因而獲得救援單位的注意。然而在此同時，卻有更多的求救貼文，被淹沒在大量的訊息海中。

專家認為若能研發出一種軟體，把攸關受災者安危的貼文提取出來，即時應用大數據，可以把緊急訊息在第一時間傳遞給救難單位，救出更多人。

# discuss about the earthquake on social media (2016.2.6)

地震好大〈驚全台有感地震，台南市...

[主文] 地震好大〈驚全台有感地震，台南市大樓倒塌←在附近的請多多小心啊OAO！大家都還好嗎？

共 21則回文 yuna\_x7x7 2016-02-06 03:58:57 共 0 次點閱 😊 23.0 😞 31.4

Plurk搜尋 > Plurk搜尋 庫存內容 加入追蹤

地震

[主文] 八卦首po地震!!住高雄房間書櫃全倒—— Sent from JPTT on my HTC\_M910x. —

共 0則回文 hydradrum 2016-02-06 04:00:20 共 0 次點閱 😊 0.0 😞 0.0

Ptt > Gossiping 庫存內容 加入追蹤

[爆封]台南超級大地震

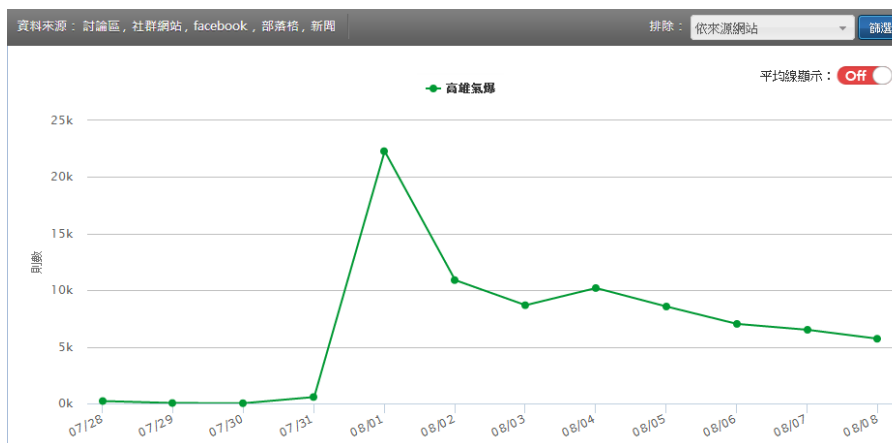
[主文] 家裡瓶瓶罐罐都倒拉站都站不穩....QQ —

共 0則回文 businessmen 2016-02-06 04:00:29 共 0 次點閱 😊 0.0 😞 29.4

Ptt > Gossiping 庫存內容 加入追蹤

post of witnessing the damage within 1 min.

# discussion about gas-leaking blasts in Kaohsiung (2014.7.31)



8:46~50pm 119 reported

9:21~29pm lots of discussions

about unknown smell in the area

peak volume around 1 hour before the blasts

# Research Literature

- ◆ In the emergencies field, social media are used in seven different ways:
  1. Listening to public debate
  2. Monitoring situations
  3. Extending emergency response and management
  4. Crowd-sourcing and collaborative development
  5. Creating social cohesion
  6. Furthering causes (including charitable donation)
  7. Enhancing research. Appreciation of the positive side

Reference: Alexander, David E. "Social media in disaster risk reduction and crisis management." Science and Engineering Ethics 20.3 (2014): 717-733.

# ◆ Functions of disaster social media

Disaster social media use	Disaster phase
Provide and receive disaster preparedness information	Pre-event
Provide and receive disaster warnings	Pre-event
Signal and detect disasters	Pre-event → Event
Send and receive requests for help or assistance	Event
Inform others about one's own condition and location and learn about a disaster-affected individual's condition and location	Event
Document and learn what is happening in the disaster	Event → Post-event
Deliver and consume news coverage of the disaster	Event → Post-event
Provide and receive disaster response information; identify and list ways to assist in the disaster response	Event → Post-event
Raise and develop awareness of an event; donate and receive donations; identify and list ways to help or volunteer	Event → Post-event
Provide and receive disaster mental/behavioural health support	Event → Post-event
Express emotions, concerns, well-wishes; memorialise victims	Event → Post-event
Provide and receive information about (and discuss) disaster response, recovery, and rebuilding; tell and hear stories about the disaster	Event → Post-event
Discuss socio-political and scientific causes and implications of and responsibility for events	Post-event
(Re)connect community members	Post-event
Implement traditional crisis communication activities	Pre-event → Post-event

Reference: Houston, J. Brian, et al. "Social media and disasters: a functional framework for social media use in disaster planning, response, and research." *Disasters* 39.1 (2015): 1-22.



# Research Literature

## ◆ From an informational prospective: users and needs

Table I: Example systems described in the academic literature that extract crisis-relevant information from social media.

System name Data; example capabilities	Reference and URL
<i>Twitris</i> Twitter; semantic enrichment, classify automatically, geotag	[Sheth et al. 2010; Purohit and Sheth 2013] <a href="http://twitris.knoesis.org/">http://twitris.knoesis.org/</a>
<i>SensePlace2</i> Twitter; geotag, visualize heat-maps based on geotags	[MacEachren et al. 2011] <a href="http://www.geovista.psu.edu/SensePlace2/">http://www.geovista.psu.edu/SensePlace2/</a>
<i>EMERSE</i> : Enhanced Messaging for the Emergency Response Sector Twitter and SMS; machine-translate, classify automatically, alerts	[Caragea et al. 2011] <a href="http://emerse.ist.psu.edu/">http://emerse.ist.psu.edu/</a>
<i>ESA</i> : Emergency Situation Awareness Twitter; detect bursts, classify, cluster, geotag	[Yin et al. 2012; Power et al. 2014] <a href="https://esa.csiro.au/">https://esa.csiro.au/</a>
<i>Twitcident</i> Twitter and TwitPic; semantic enrichment, classify	[Abel et al. 2012] <a href="http://wis.ewi.tudelft.nl/twitcident/">http://wis.ewi.tudelft.nl/twitcident/</a>
<i>CrisisTracker</i> Twitter; cluster, annotate manually	[Rogstadius et al. 2013] <a href="https://github.com/jakobrogstadius/crisistracker">https://github.com/jakobrogstadius/crisistracker</a>
<i>Tweedr</i> Twitter; classify automatically, extract information, geotag	[Ashktorab et al. 2014] <a href="https://github.com/dssg/tweedr">https://github.com/dssg/tweedr</a>
<i>AIDR</i> : Artificial Intelligence for Disaster Response Twitter; annotate manually, classify automatically	[Imran et al. 2014a] <a href="http://aidr.qcri.org/">http://aidr.qcri.org/</a>

Reference: Imran, Muhammad, et al. "Processing social media messages in mass emergency: A survey." ACM Computing Surveys (CSUR) 47.4 (2015): 67.

Social Listening

# Introduction to OpView

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# Case Study : OpView Listening Platform

## OpView Service

您的輿論觀測站

連上OpView · 品牌形象、輿論觀點監測好輕鬆



## Largest social listening platform in Taiwan

- use hundreds of thousands robots to collect  
> 90% social media traffic since 2011,  
analyze 6 billion Chinese words everyday.
- apply for top brands in 30+ categories.
- easy & fast for listening, survey, research, prediction, etc.



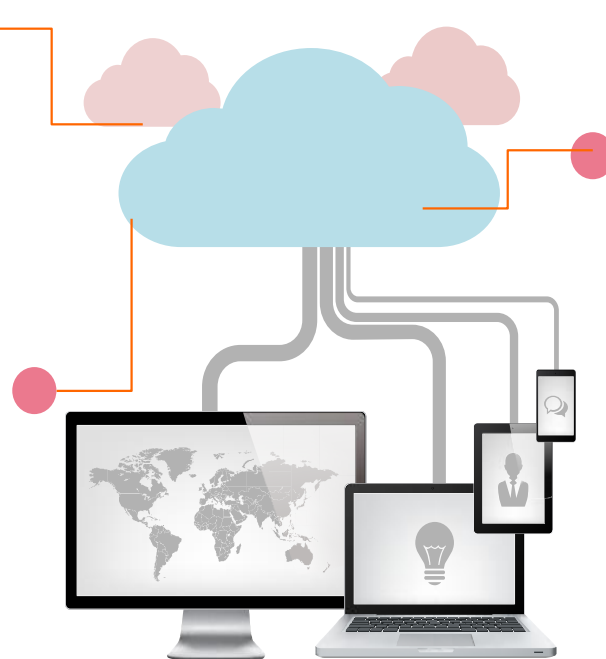
# Case Study : OpView Listening Platform

## Frequently Update

- 100+ cloud servers  
24/7 non-stop crawling
- update within 30 min.

## Widest Listening Scope

- covering more than  
45,000 channels
- avg. 2.6 million posts  
collected daily



## Leading Mandarin Semantic Technology

- best information retrieval  
award in NTCIR
- sentiment and language  
analysis by deep learning

- 
- ◆ > 90% social media traffic, including the categories :
    - blog : 1800+
    - micro-blog : twitter, Plurk, Instagram
    - forum : 5000+
    - bulletin board system (BBS)
    - question answering : Yahoo! Answer, Line Q
    - social network : Facebook (fanpages, groups, leaders)
    - video : YouTube
    - 3000+ news and comments

- Topic identification and tracking.

- Volume analysis

- by time

- by source



查詢條件

期間：  
☒ 最近15天  
☐ 最近30天  
☐ 2012/05  
☐ 開始日期 ~ 結束日期

來源：  
☒ 新聞  
☒ 部落格  
☒ 討論區

主題：  
☒ SonyEricsson  
☒ iPhone  
☒ HTC  
☒ Samsung-手機



- Automatic keyword extraction  
& summarization
- Sentiment analysis
  - polarity : positive or negative ?
- Influencer analysis

### 熱門來源頻道列表

共出現於436個頻道, 主文5816則, 回文12995則

- | Rank | Channel                        | Volume      |
|------|--------------------------------|-------------|
| 1    | mobile01<br>HTC(Android)       | High        |
| 2    | FacebookSearch<br>Facebook近況留言 | Medium-High |
| 3    | mobile01<br>DA硬體綜合(PDA應用)      | Medium      |
| 4    | mobile01<br>投資與理財(時尚生活)        | Low-Medium  |
| 5    | PlurkSearch<br>PlurkSearch     | Low         |
| 6    | mobile01<br>SAMSUNG(Android..) | Low         |
| 7    | mobile01<br>手機綜合討論(行動通訊)       | Low         |
| 8    | Ptt<br>MobileComm              | Low         |



# ◆ OpView for Brand : to monitor competitors and various industries in Taiwan



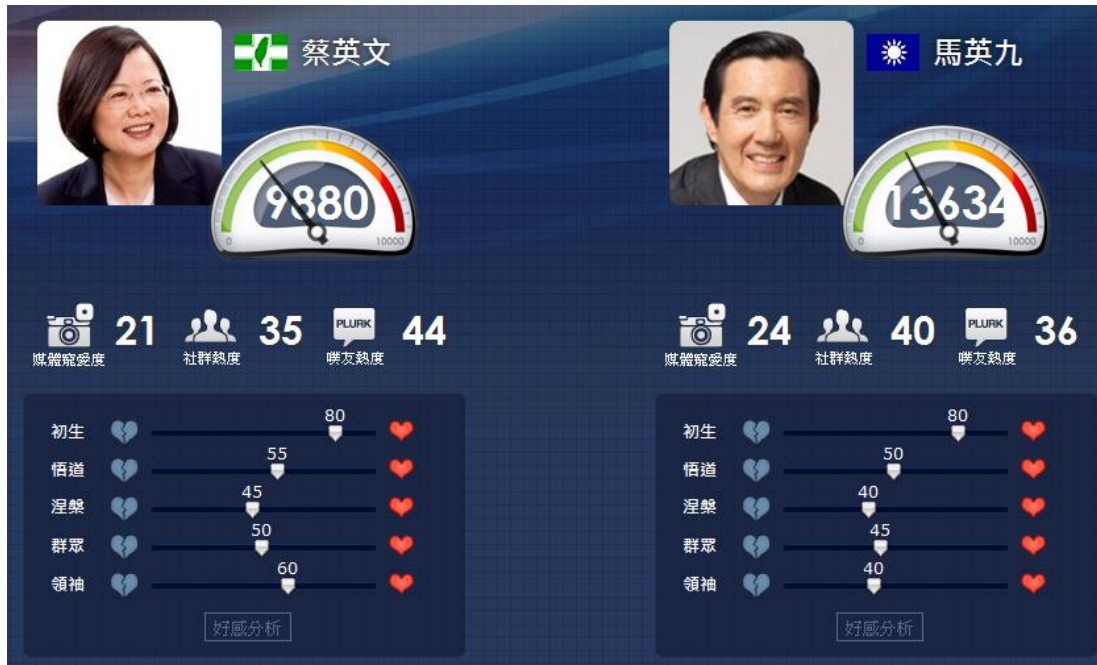


# ◆ OpView for Brand : using innovative 'Storm Graph' to visualize the relationship among competitors





# OpView Vote : first social listening for election forecast in Taiwan (2009~2014)



As Obama uses Twitter mining for vote prediction,  
we use social volume and sentiments to predict.  
the average accuracy is very high. (>90%)

# ◆ OpView Opinion Tracker : to track opinions from influencers on social media such as journalists, politicians, doctors, professionals, KOLs, etc.



王進崑  
肥胖：10.3  
代糖：1  
磷：1

王進崑

媒體報導與態度檢視



吳造中  
肥胖：1  
代糖：1  
磷：1

吳造中

媒體報導與態度檢視



李蕙蓉  
肥胖：1  
代糖：1  
磷：1

李蕙蓉

媒體報導與態度檢視

OpView  
利益關係人平台



邱淑媿  
肥胖：2.44  
代糖：0.44  
磷：2.74

邱淑媿

媒體報導與態度檢視

**王進崑** 市場快訊／六成七父母不知道全穀所含營養成份

...台灣營養學會理事長 **王進崑** 表示，調查結果可看出父母對於準備早餐心有餘而力不足。外食早餐多素、礦物質、纖維素等孩童所需的重要營養素，容易存在營養不均衡的問題，而早餐若長期營養不均，孩子的學習成效，台灣營養學會鼓勵父母們能主動提供均...

2012/06/11 14:02:00 今日新聞 > 即時新聞 庫存內容

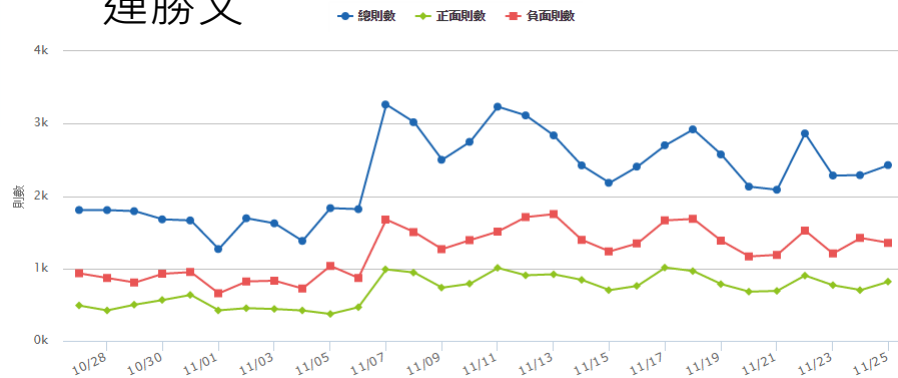
**王進崑** 【燕麥熱量比飯高1.6倍，小心越吃越肥】錯當節食主餐，反易變...

...燒脂肪。(資料來源：台灣營養學會理事長 **王進崑**)...

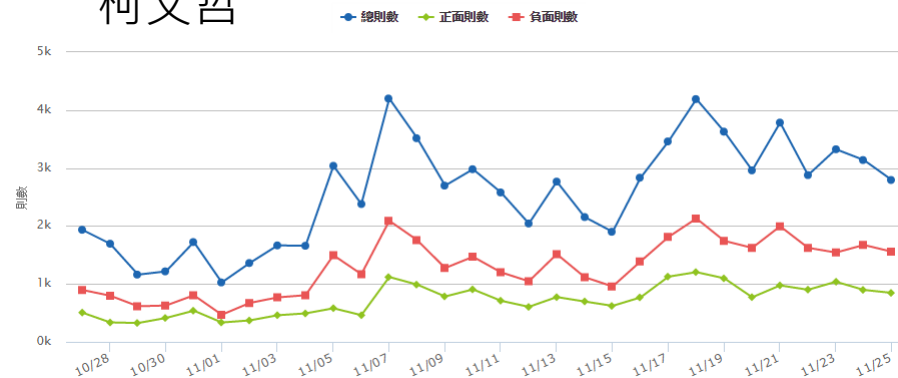
共0則回文 2012/06/09 10:09:00 FacebookSearch > Facebook近況留言 庫存內容

# 30-Day Sentiment and P/N ratio ~2014/11/28

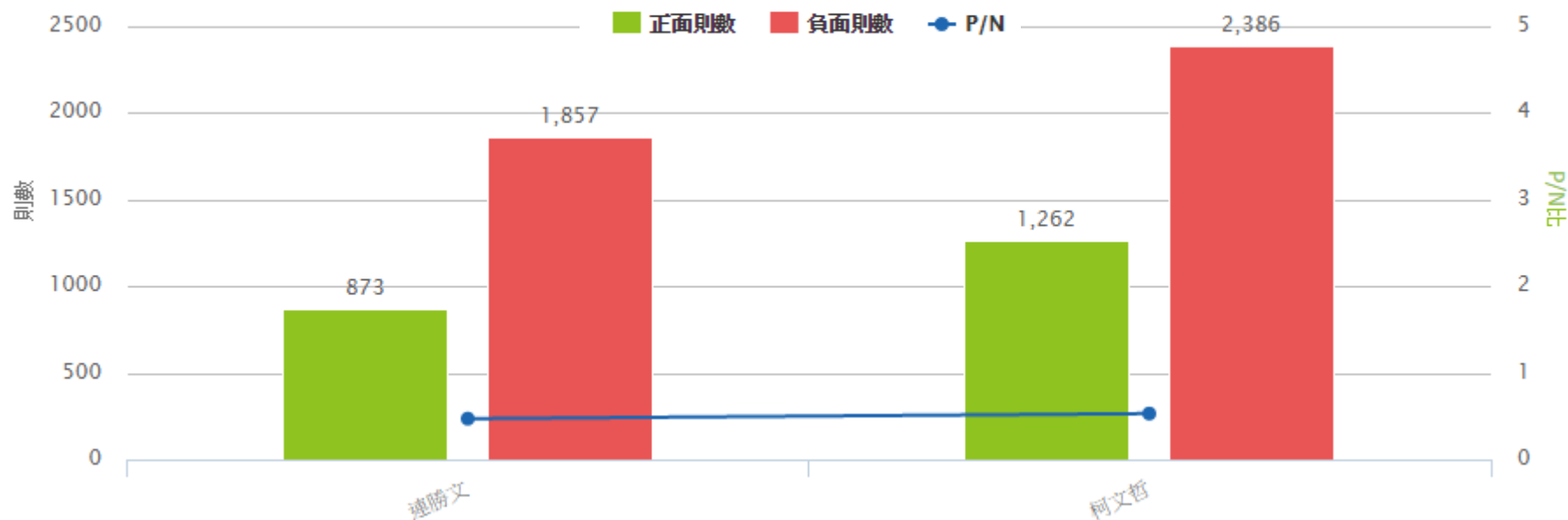
## 連勝文



## 柯文哲



主題	總聲量數	正面情緒聲量數	正面情緒比例(P)	負面情緒聲量數	負面情緒比例(N)	中立情緒聲量數	顯著情緒比例	P/N比
連勝文	3176	873	27.5%	1857	58.5%	1046	67.1%	0.47
柯文哲	3909	1262	32.3%	2386	61%	1198	69.4%	0.53

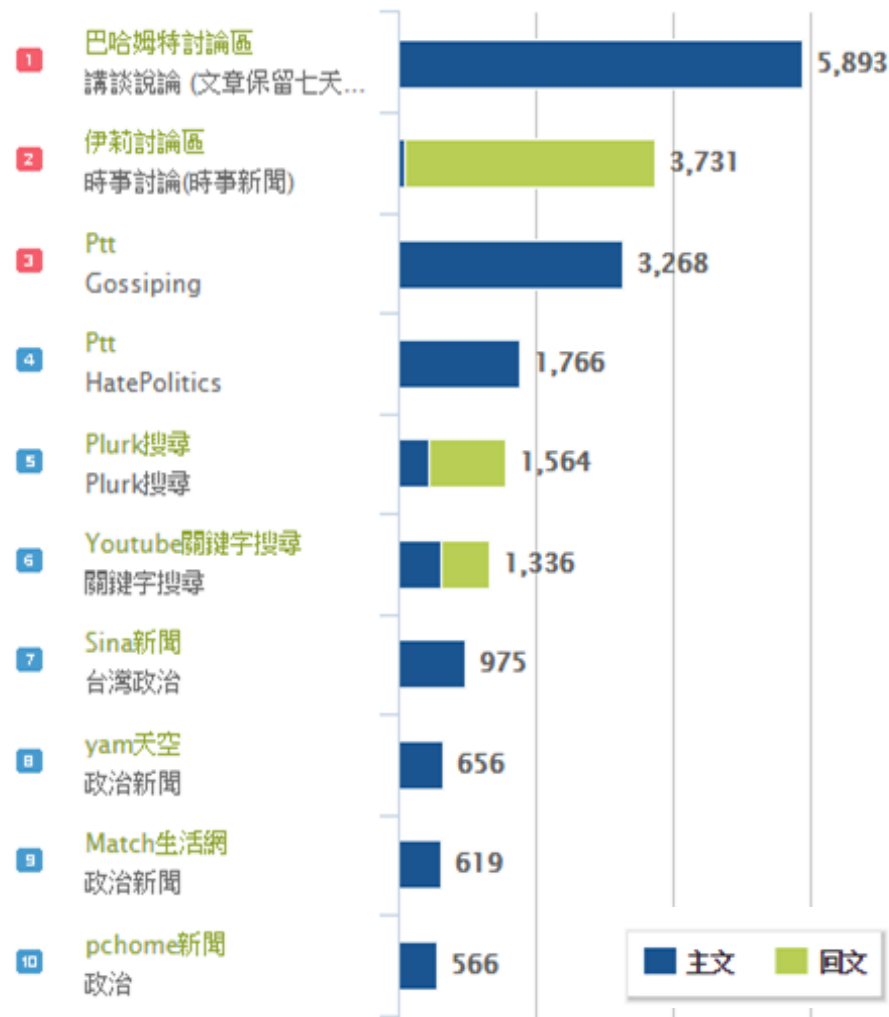
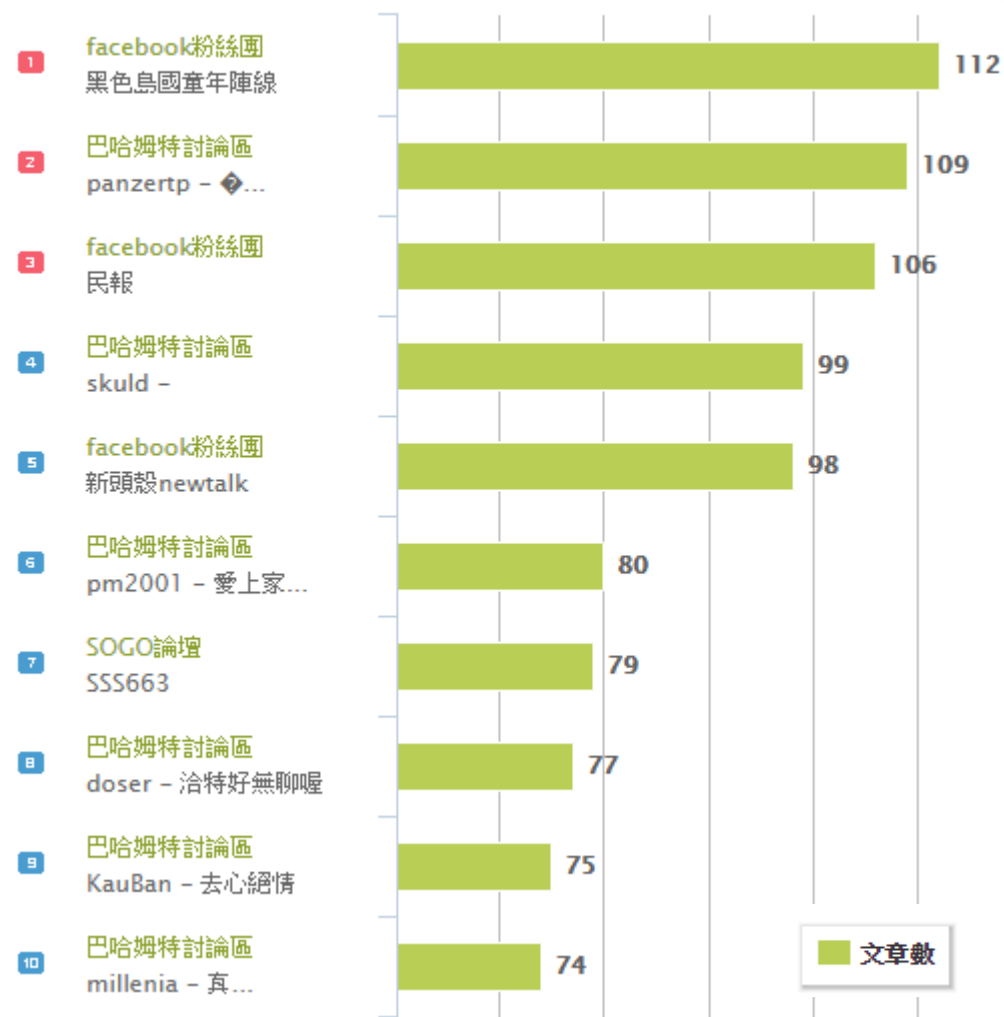


## 15-Day Key Influencers (Opinion Leader)

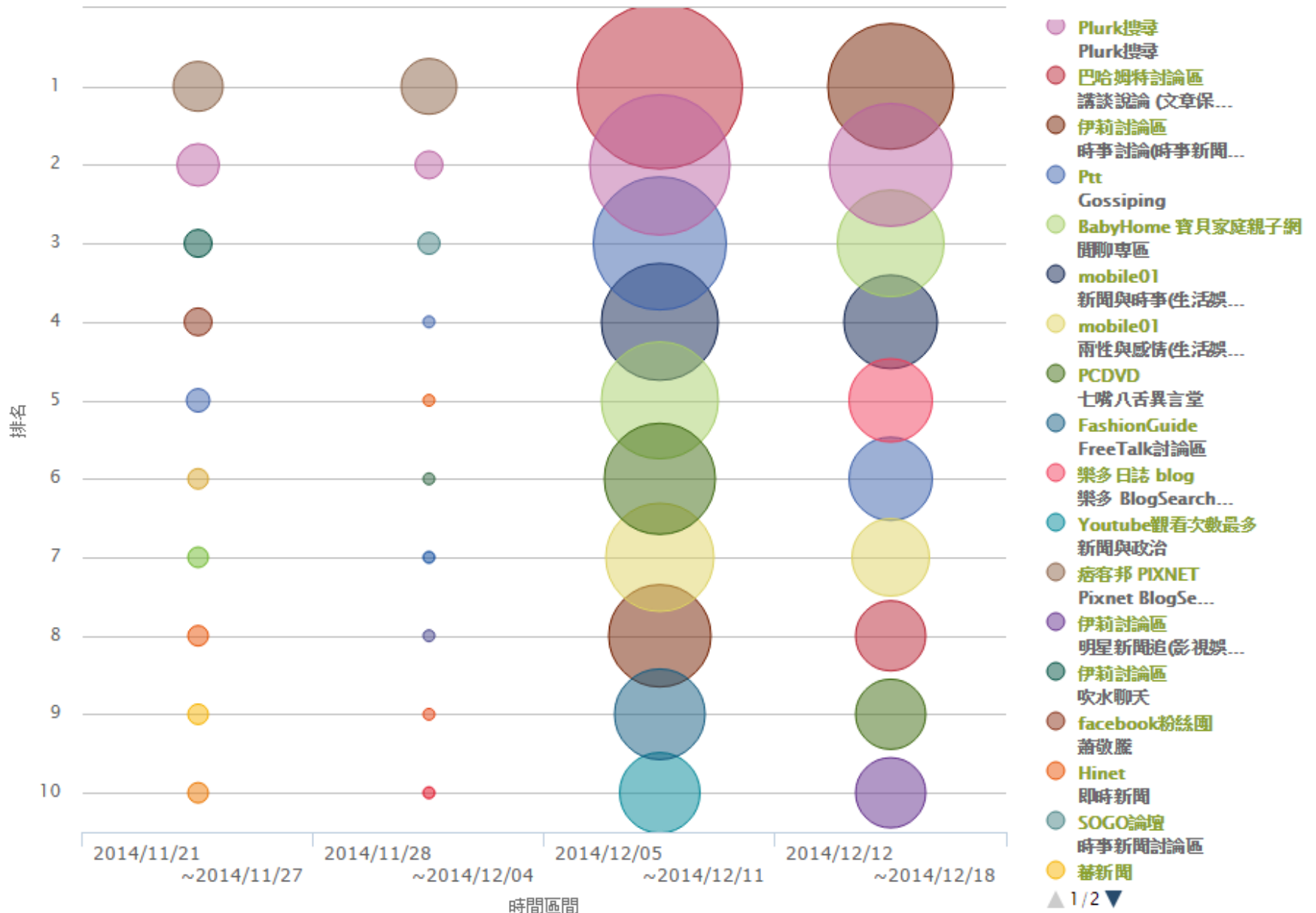
## 15-Day Key Media (Sources)

總計8452位作者

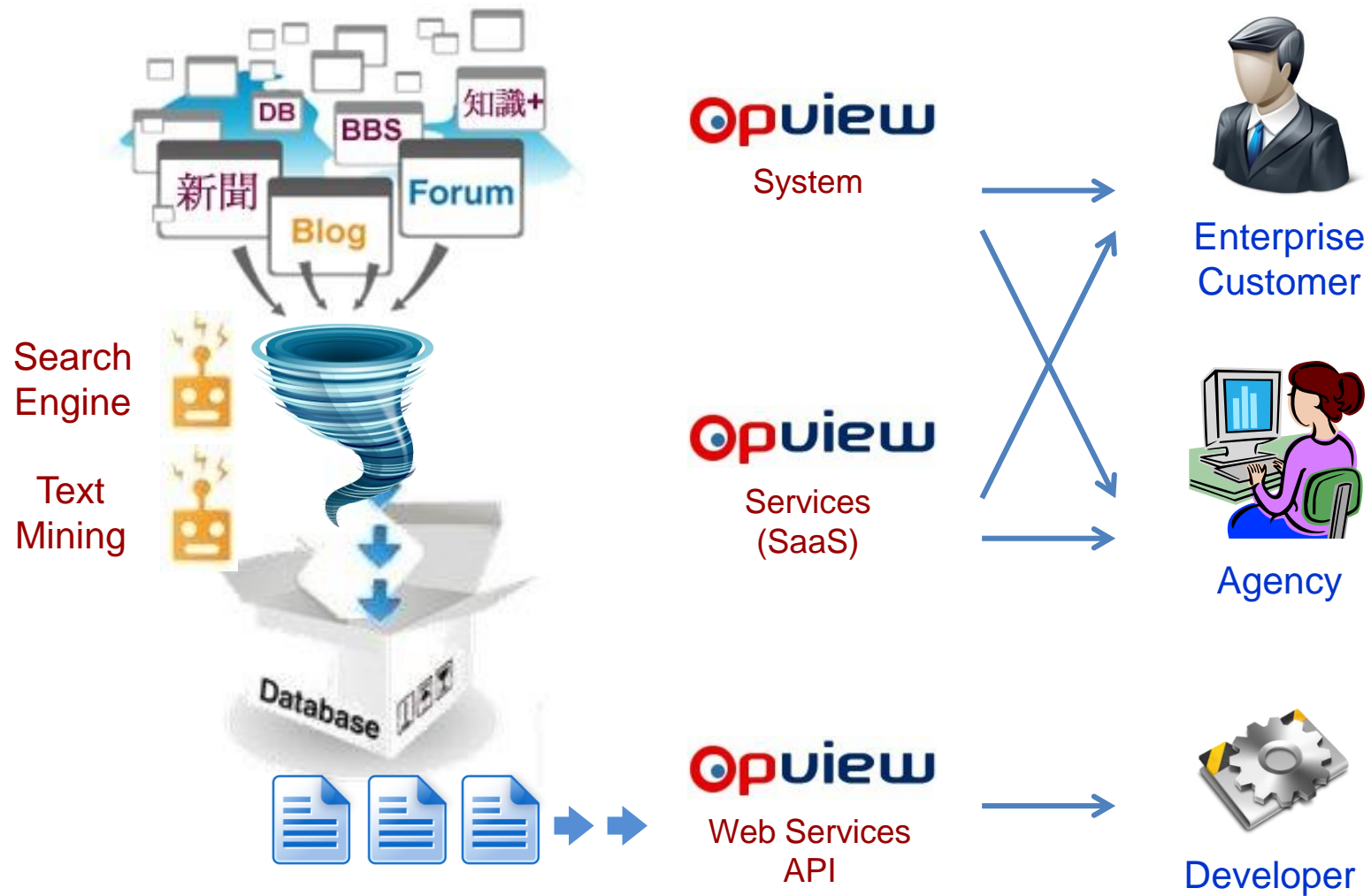
共出現於704個頻道. 主文29779則,回文8689則,總計38468則



# 4-Week Propagation Path analysis



## ◆ How OpView works





# applications for OpView API

## ◆ mature approach to various applications

- market research and forecast
- consumer study
- public opinion analysis
- crisis and disaster reduction
- social early warning
- remarketing
- and more...



Listening

Analytics

Warning

Prevention

OpView for Disaster Reduction

# System Architecture

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# Data Source

## 213 Websites about Disaster

### 2015/8 Typhoon Soudelor

Total : 6,816,793 Posts

Daily avg: 219,897 Posts

### 2016/2 Tainan Earthquakes

Total : 5,556,843 Posts

Daily avg : 191,615 Posts

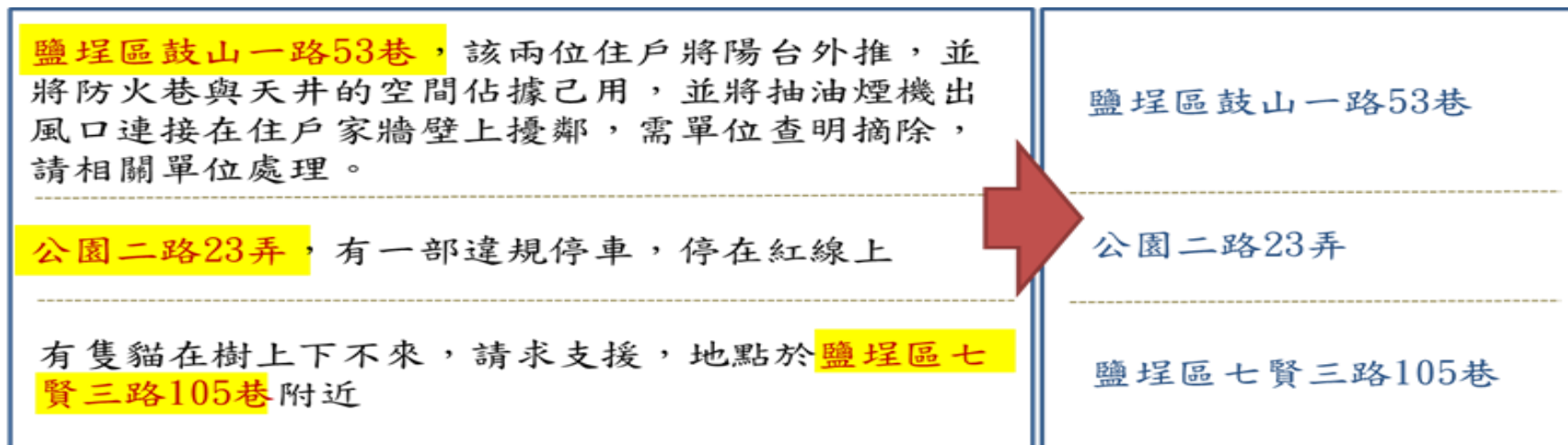


Overall, there are 20,000 channels included

# Location Entity Extractor

## ◆ Hybrid sequence labeling model

- Rule-Based
- Machine Learning-Based



Location Entity :

Address, city, school, popular attractions ... etc.

# Disaster Entity Extractor

## ◆ Hybrid sequence labeling model

- Rule-Based
- Machine Learning-Based

## ◆ 2 types disaster entity

- Disaster and Event

01 Data Labeled By Annotator

02 Training

03 Auto Labeling

發文時間	標題	內文
2016-07-08 23:00:25	【中颱】尼伯特2300整點特報】東森新聞為台東 加油9號4縣市 停班課 北北基 桃宜脫離警戒區#請分享鎖定東森新聞小編已經為您整理了今天 台東 相關的災情除了 台東 其他地區的 颱風 災情也都有掌握喔~ ● 台東 災情全紀錄 颱風 摧毀 知本溫泉 區民眾度過驚魂夜http://bit.ly/29GsYDa 強風 暴雨 重創 台東 中華路 上滿目瘡痍http://bit.ly/29rQJ2s尼伯特登陸 台東 驚魂夜招牌看板 橫躺馬路http://bit.ly/29tjNoJ 台東 災情慘重 狂風 豪雨 家園全毀 http://bit.ly/29Dbp4u不敵17級 強風< span class="label-event">狂吹19噸重 石斗車脫軌 翻覆 http://bit.ly/29tjSc1直擊! 台東 超大風 雨車庫棚架全 吹 翻 http://bit.ly/29Dbu8s尼伯特挾 強風 暴雨 台東 招牌電桿都被 吹倒 http://bit.ly/29tjKsW滿目瘡痍! 台東市 區招牌玻璃 掉 滿地 http://bit.ly/29DbuVV尼伯特有多強?1支影片帶你看各地災情 http://bit.ly/29tjGd1尼伯特 狂風 暴雨 侵襲 台東 便利商店損失慘 http://bit.ly/29DbGnZ尼伯特挾 狂風 豪雨 台東 8噸大貨車 翻覆 http://bit.ly/29tjOc8 颱風 摧殘 台東 旅館招牌 吹落 躺路中 http://bit.ly/29DbJA4尼伯特凌晨太麻里登陸 台東 一夜 狂風 暴雨 http://bit.ly/29tjVEM尼伯特襲台! 台東 滿目瘡痍招牌四散http://bit.ly/29tjIl2 尼伯特 颱風 侵台! 台東 超商一個「慘」 http://bit.ly/29tjQRx	

OpView for Disaster Reduction

# System Demonstration

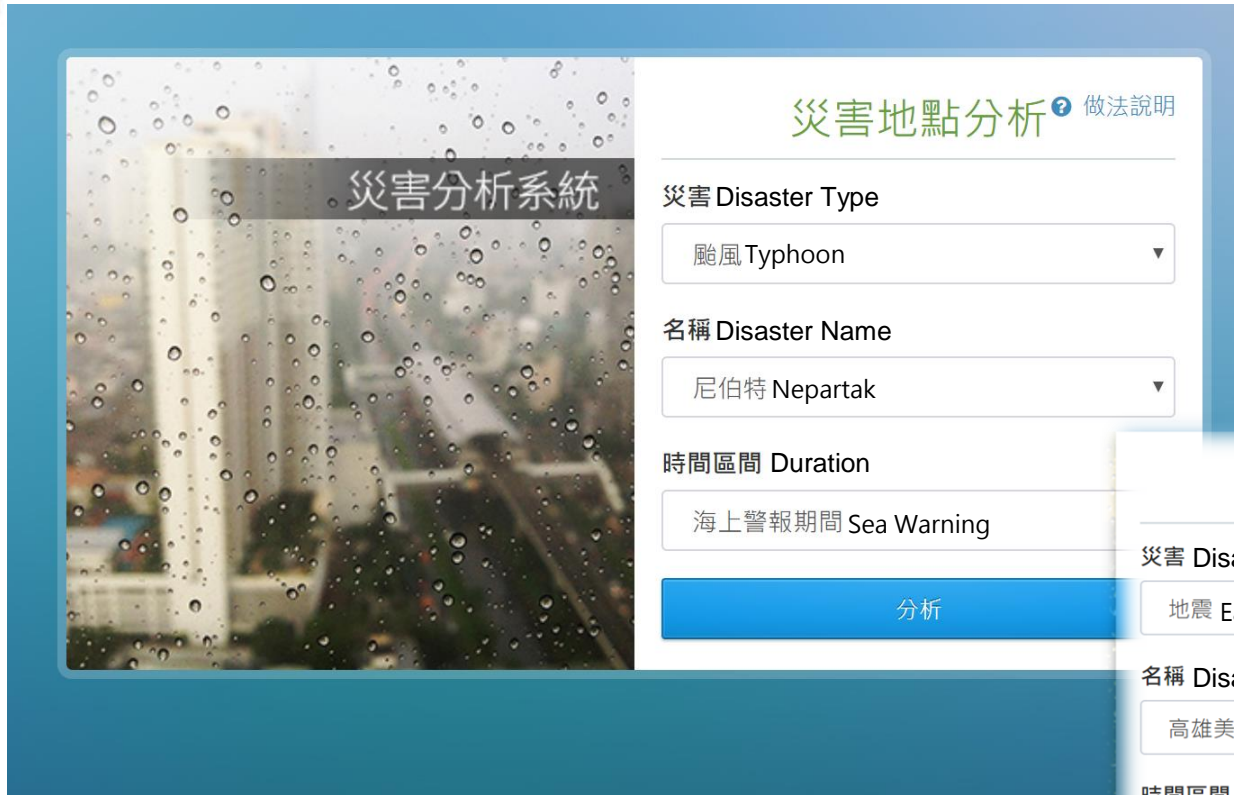
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# Disaster Analysis System

## Focus :

- Typhoon
- Earthquake
- Flood



The screenshot shows the 'Disaster Analysis System' interface. On the left is a background image of a city street with raindrops on a window, with the text '災害分析系統' (Disaster Analysis System) overlaid. On the right is a form titled '災害地點分析' (Disaster Location Analysis) with a help icon and '做法說明' (How to use). The form has three sections: '災害 Disaster Type' with a dropdown menu showing '颱風 Typhoon'; '名稱 Disaster Name' with a dropdown menu showing '尼伯特 Nepartak'; and '時間區間 Duration' with a dropdown menu showing '海上警報期間 Sea Warning'. A blue '分析' (Analyze) button is at the bottom.



This screenshot shows the same 'Disaster Analysis System' interface but with an earthquake analysis form. The '災害 Disaster Type' dropdown shows '地震 Earthquake'. The '名稱 Disaster Name' dropdown shows '高雄美濃地震 Tainan earthquakes'. The '時間區間 Duration' dropdown is open, showing a list of time intervals: '12小時內 Less than 12 hours' (highlighted), '12小時 ~ 24小時 12 hours ~ 24 hours', '24小時 ~ 36小時 24 hours ~ 36 hours', '36小時 ~ 48小時 36 hours ~ 48 hours', '48小時 ~ 60小時 48 hours ~ 60 hours', and '60小時 ~ 72小時 60 hours ~ 72 hours'. A help icon and '做法說明' (How to use) are also present.

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# Method Summary

## ◆ Entity Extraction

### ▶ 災害詞辨識

標示出對各災害所出現的災害詞，如颱風、強颱、強烈颱風等。

颱風 要來了~大家要乖乖待在家別亂跑

Disaster entities were highlighted in **RED**

### ▶ 災害事件詞辨識

標示出對各災害所出現的災害事件詞，如暴雨、停班、淹水等。

等公車 暴雨 QQ

Event entities were highlighted in **GREEN**

### ▶ 地點詞辨識

標示出地點詞，如台東市、桃園機場、台北市承德路等。

# 花蓮 的民眾請留意！！

Location entities were highlighted in **BLUE**

### ▶ 否定詞辨識與影響

在社群資料中，許多網友會提出對災害的預測、否定及疑問。因此標示出否定詞，如沒有、可能、嗎等，並去除同句尚未發生的災害事件詞。

電視上說有 可能 會 停水，請大家趕快去洗澡  
→ 電視上說有可能會停水，請大家趕快去洗澡

Event mentioned in the same sentence  
in which negative entities detected will be removed.

# Method Summary

## ◆ Disaster Event and Location Analysis

- When an event and a location co-occur in the same sentence, it is counted as one "mention"

## ◆ 6 Major Event Categories

### ▶ 災害地點事件分析

將標示於同句的地點及事件，做為此事件發生於該地點的一次記錄。依據排序最高的前10名地點，統計最高的前10名事件及所屬事件類別。

民生類 臺北市 上午 停班停課 噫！

### ▶ 事件類別

該類別所包含的事件範例

Traffic	交通類	停駛、封閉、誤點等	民生類	停班停課、停電、停水等	Livelihood
Flood	水災類	大雨、淹水、大浪等	公共安全類	倒塌、脫落、裂開等	Public Security
Windstorm	風災類	大風、吹倒、焚風等	自然災害類	落石、狂搖、餘震等	Nature Disaster

# Disaster Analysis System

- ◆ The most mentioned locations are showed as below

時間範圍：2016-02-06 03:55 ~ 2016-02-06 15:55		
災害地點 Location		數量 Mentions
—	永康區永大路二段207號	785
災害類型 Category	災害事件 Event	數量 Mentions
公共安全類	倒塌	785
+	台南	409
+	台南信義北路	403
+	高雄	294
+	信義北路	235
+	歸仁區大仁街	172
+	新化區京城銀行大樓	157
+	台南東區長東街103巷	156
+	台中	111
+	台灣	111

# Disaster Analysis System

## ◆ 3 kinds of entities are labeled

- Location
- Disaster
- Event

## ◆ Relevance sorted by the amount of mentions

受災地點：永康區永大路二段207號 災害事件：倒塌 災害期間：2016-02-06 03:55 ~ 2016-02-06 15:55

來源網站	發文時間	標題	內文	相關度
facebook 粉絲團 > 中央社新聞 聞粉絲團	2016-02-06 06:24:49	希望一切平安# 地震 # 台南 # 永康	目前 台南 有八處需要人力資源！請民眾不要圍觀以免妨礙救災！ 1. 永康區永大路二段207號 據報大樓 倒塌 2. 台南市信義北路 46號大樓 倒塌 3. 台南市東區長東街103巷 傳出大樓 倒塌 4. 永康區國光五街 燦坤大樓 倒塌 5. 新化區京城銀行大樓 倒塌 6. 歸仁區大仁街 信義北路 大樓 倒塌 7.東區 大智里菜市場長東路 103巷大樓 倒塌 8.仁德 太子一街 大樓 倒塌 請轉	中
facebook 粉絲團 > 蘋果日報 即時新聞	2016-02-06 06:25:11	現場警消、特搜大隊人員加油!!!! # 台南 大地震 #大樓 倒塌	目前 台南 有八處需要人力資源！請民眾不要圍觀以免妨礙救災！ 1. 永康區永大路二段207號 據報大樓 倒塌 2. 台南市信義北路 46號大樓 倒塌 3. 台南市東區長東街103巷 傳出大樓 倒塌 4. 永康區國光五街 燦坤大樓 倒塌 5. 新化區京城銀行大樓 倒塌 6. 歸仁區大仁街 信義北路 大樓 倒塌 7.東區 大智里菜市場長東路 103巷大樓 倒塌 8.仁德 太子一街 大樓 倒塌 請轉	中
facebook 粉絲團 > ETtoday 新聞雲	2016-02-06 06:43:26	目前已知救出33人。( #SuperMM ) 天佑 台灣 ! 高雄 美濃 大地震 災情回報...	目前 台南 有八處需要人力資源！請民眾不要圍觀以免妨礙救災！ 1. 永康區永大路二段207號 據報大樓 倒塌 2. 台南市信義北路 46號大樓 倒塌 3. 台南市東區長東街103巷 傳出大樓 倒塌 4. 永康區國光五街 燦坤大樓 倒塌 5. 新化區京城銀行大樓 倒塌 6. 歸仁區大仁街 信義北路 大樓 倒塌 7.東區 大智里菜市場長東路 103巷大樓 倒塌 8.仁德 太子一街 大樓 倒塌 請轉	中
facebook 粉絲團 > 東森新聞	2016-02-06 06:39:31	今晨6.4 強震 ! 台南大樓 倒塌 現場哀號聲不斷 # 快馬加編：希望大家一切平安o(...	目前 台南 有八處需要人力資源！請民眾不要圍觀以免妨礙救災！ 1. 永康區永大路二段207號 據報大樓 倒塌 2. 台南市信義北路 46號大樓 倒塌 3. 台南市東區長東街103巷 傳出大樓 倒塌 4. 永康區國光五街 燦坤大樓 倒塌 5. 新化區京城銀行大樓 倒塌 6. 歸仁區大仁街 信義北路 大樓 倒塌 7.東區 大智里菜市場長東路 103巷大樓 倒塌 8.仁德 太子一街 大樓 倒塌 請轉	中
facebook 粉絲團 > ETtoday	2016-02-06 10:33:01	現在正是需要人力物資的時候，讓我們一起動起來！	台南 地區目前需要人力資源！需捐助物資如下：《醫療產品》無菌紗布、繃帶、白藥水、透氣膠帶《物品資助》未使用大毛巾、棉布手套、鏟子請聯絡當地警察局或消防隊，以便將物資快速送往急需地	中

OpView for Disaster Reduction

# Discussion

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# The advantages

- ◆ With the help of natural language processing and intelligent agent technology, the content and the context related to a disaster or emergency (earthquake, typhoon, etc.) may be detected and extracted very fast, in all stages (Pre-event, Event, Post-event)

# Issue #1 Data Quality

- ◆ "How accurate is the system?" – 2 observations
  - The precision is high (low false positive), because the possibility is low for multiple false alarms (i.e. occasions when people wrongly believe that something dangerous or unpleasant is happening or will happen)
  - The recall (false negative) depends on the type and scale of a disaster.
    - The recall of earthquake, typhoon is higher than fire or power failure.
    - The recall of a nation-wide disaster is higher than a local one.

# Issue #2 Data Privacy

- ◆ "How will it breach or violate the privacy?"
  - Data from social network are open for everyone to access
  - Natural language processing technology enables us to identify the named entity such as personal name, organization name, address, phone number, bank account, license plate, and so on.
  - For example, when a location (address) is reported as the spot of a disaster such as flooding or fire on social media, the price of real estate near the location goes down.

# Issue #3 Data Discrimination

- ◆ "How is data discrimination made?"
  - For a disaster, the severity will be computed fast and automatically with the technology of intelligent agent, and further it supports to decide the allocation of limited resources.
  - It makes treating a person or particular group of people differently.

# Issue #4 Data Abuse/Misuse

- ◆ "Will the system be abuse or misuse?"
  - The system has its positive side, and negative side.
  - Some people may disseminate rumors on social media, to undermine authority and promote terrorist acts, or to interfere the financial market.
    - For example, rumors spread on twitter make the stock market drop (and then recover) dramatically.

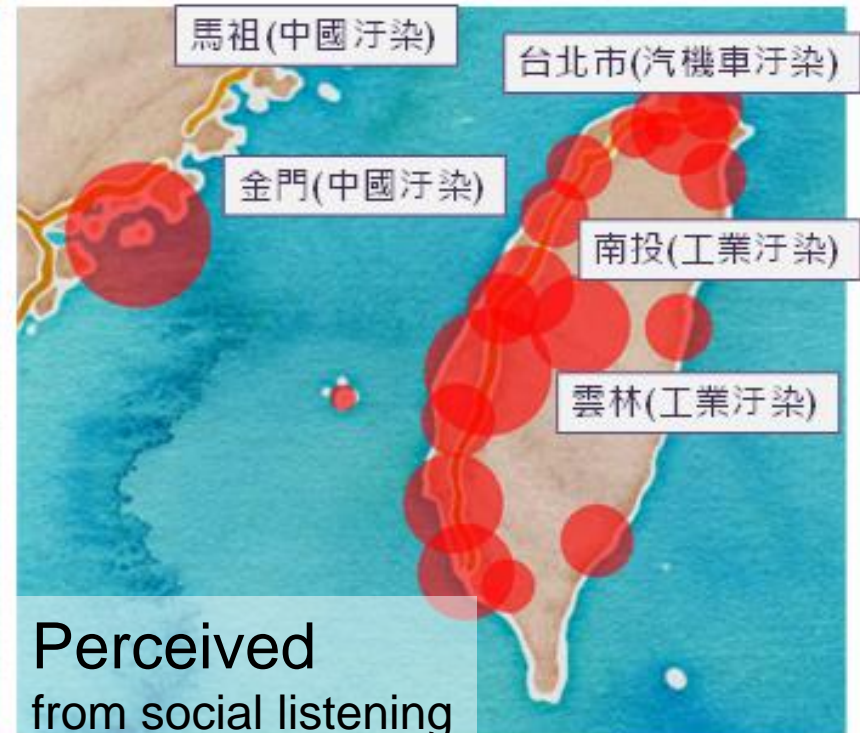
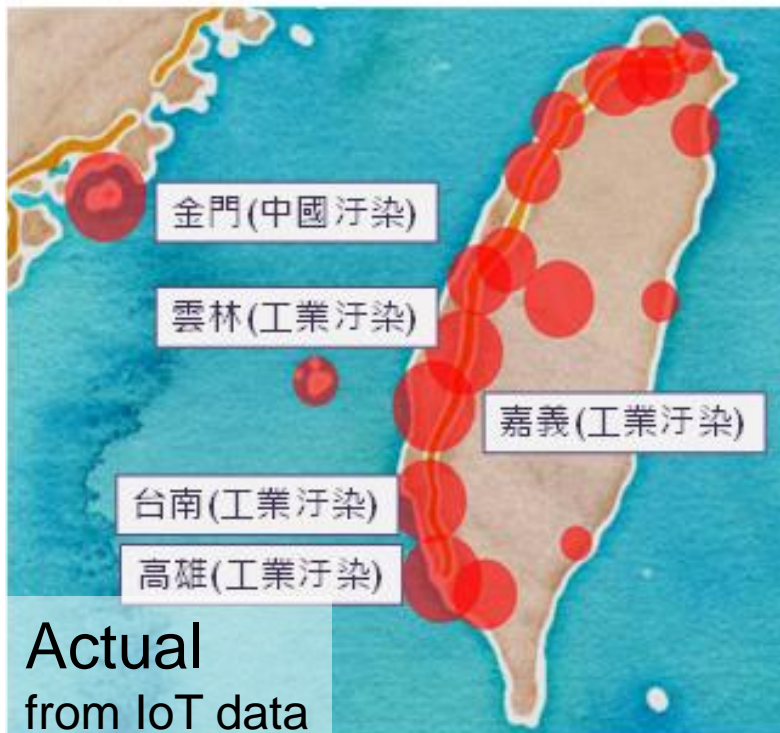
Social Listening

# Related Applications for OpView

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# Case Study : Perceived Air Pollution

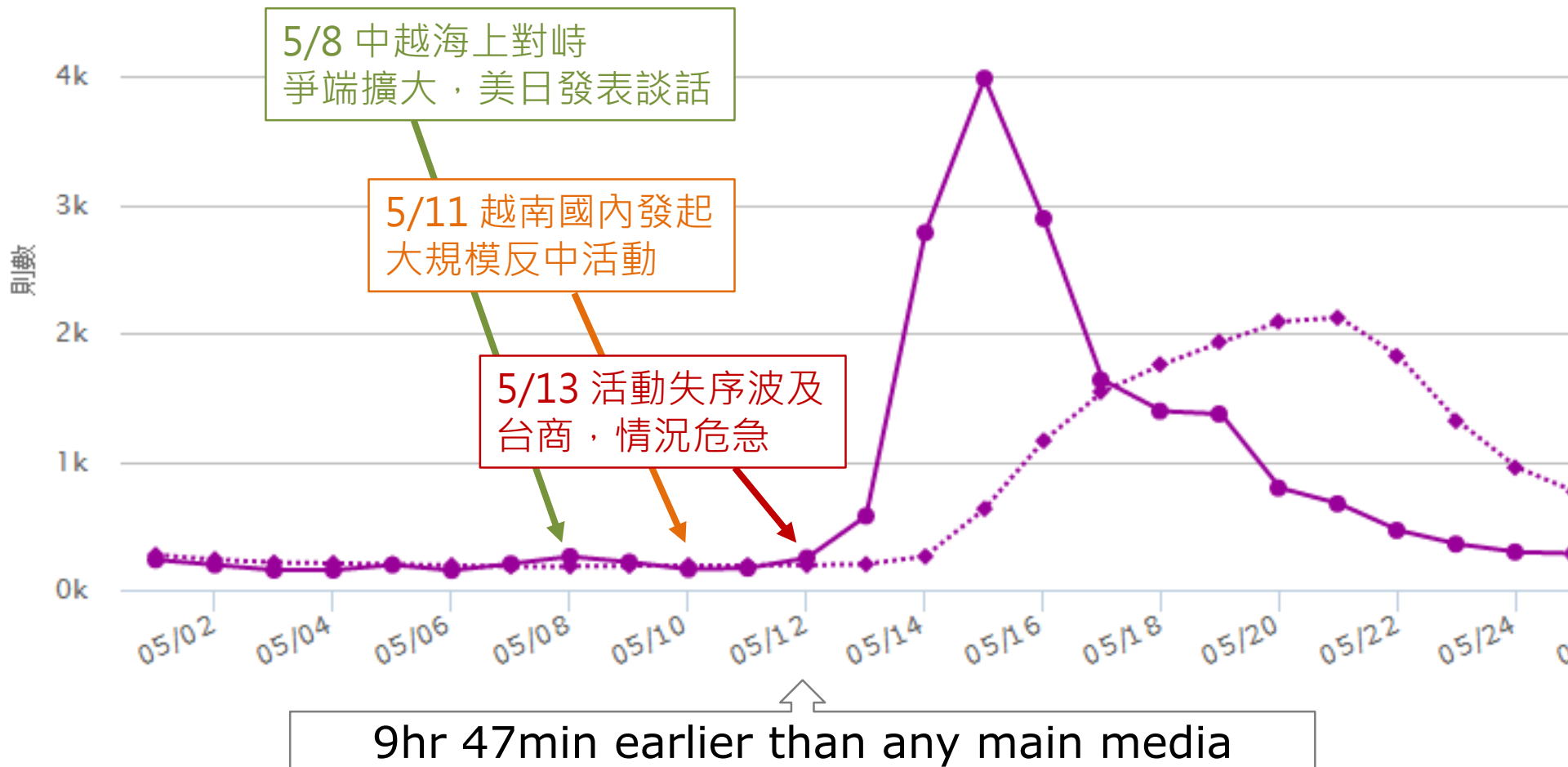
- Social listening for perceived degree of air pollution in each county of Taiwan (Right figure), and then compare to the PM10 data from sensors (Left figure). To find out in which county people are more 'sensitive' to air pollution.





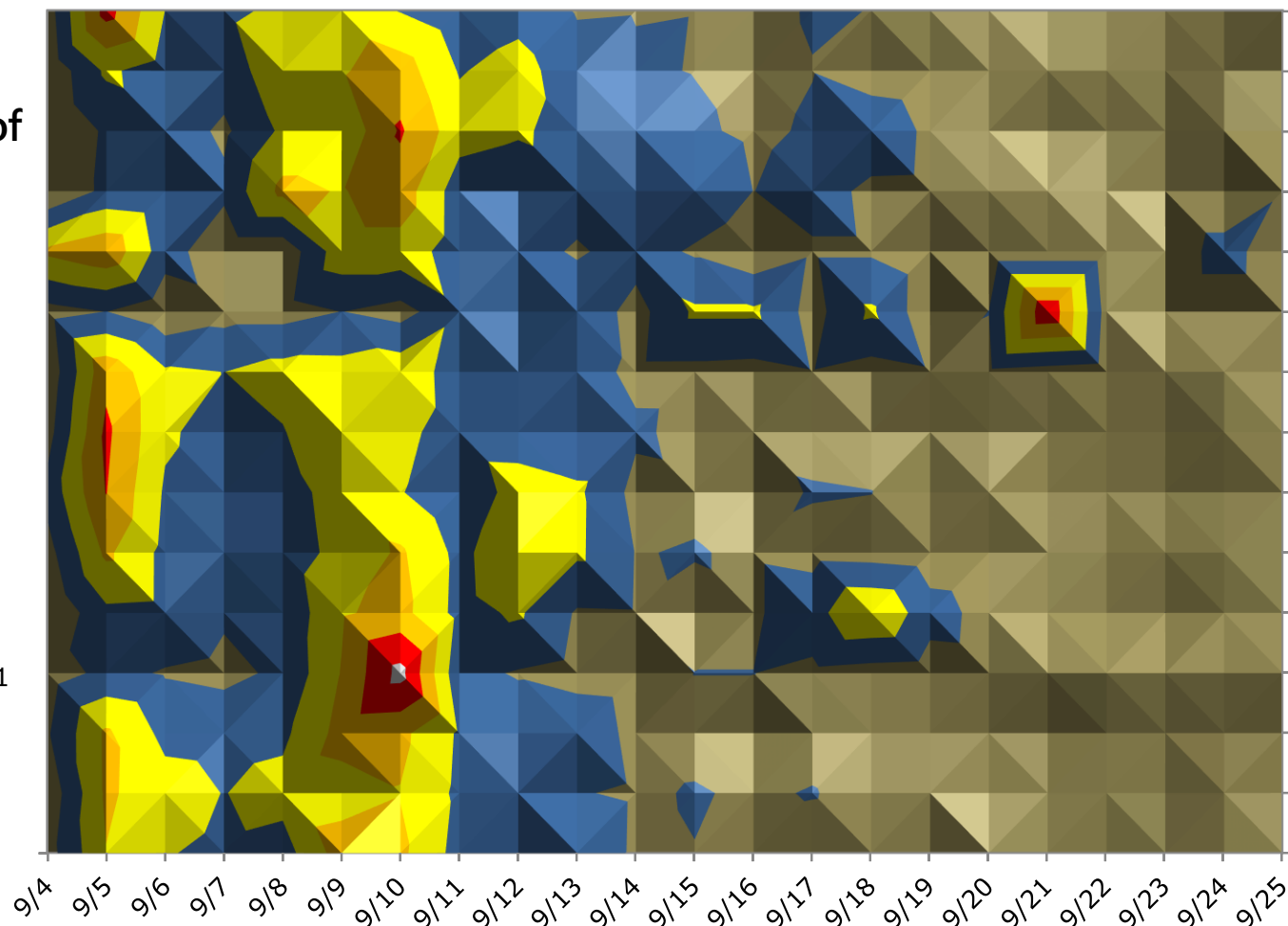
# Case Study : South China Sea Crisis

## ◆ Social early warning for conflicts between China and Vietnam



# Case Study : Overview of Food Safety Scandal

Z-score of Volume



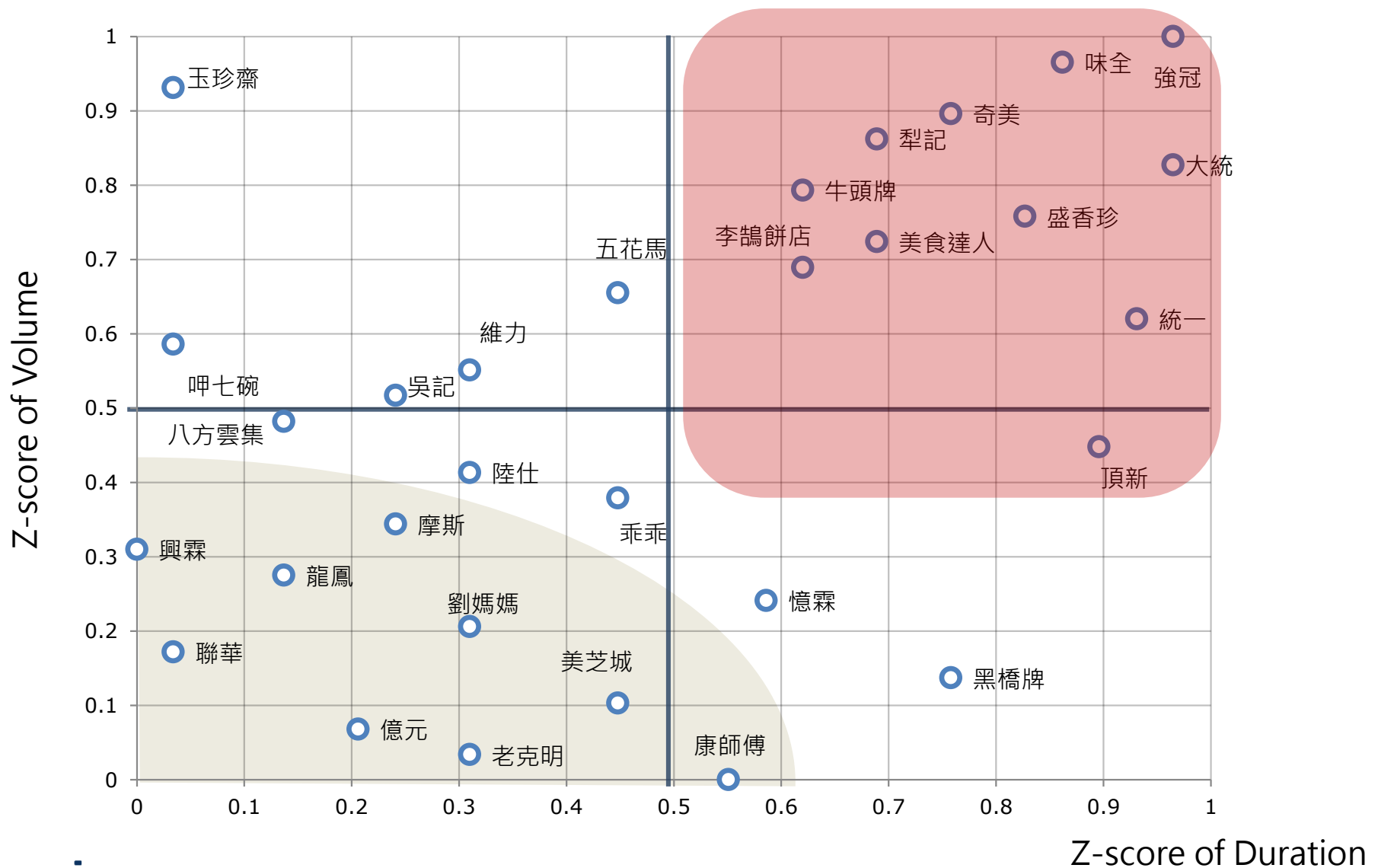
高峰期

次高峰期

延燒期

法規與政府機關  
認證標準  
經濟發展  
政治操作  
資訊平台  
資源分配  
產品安全評價  
食品鏈管控  
產業別  
價格  
台灣食品形象  
危機處理  
廠商賠償  
行為改變  
心理/生理反應

# Food Safety Scandal – Brand Impact Map



# Case Study : Social Risk Evaluation

- ◆ Establish various risk-sensitive model from the content and context by the Deep NLP analysis

蔡金愛 女 1962/\*\*/14 48 無業 嘉義縣 Q20062\*\*\*\* 臺中市西區 中興里美村路一段\*\*\*巷\*\*號 詐欺 涉嫌詐欺 2011/\*\*/31 臺中市南屯區 Y Z:\Photos\1000232蔡金愛涉嫌詐欺\_1.JPG 楊正太 Y 1 Y Y 2 1 Y Y N N 余日天 男 1971/\*\*/01 49 服務工作人員 南投縣 告訴代理人 臺中市西屯區福上巷\*\*弄\*\*號 詐欺 臺中市南屯區大墩路\*\*\*號\*樓 (家樂福) 臺中市南屯區大墩路\*\*\*號\*樓 一、犯罪嫌疑人蔡金愛於101年\*月31日15時涉嫌詐欺罪犯嫌蔡金愛、無業，經查有賭博刑案紀錄，尤不知悛悔。涉嫌於上記犯罪時、地，意圖為自己不法之所有，進入告訴代理人余日天所任職之台灣家樂福股份有限公司大墩店內，利用該店放置麻將牌區域未裝設監視器監錄，徒手打開二盒價錢不同之麻將牌外盒膠膜，再將高

body h1 span b span

# Social Listening for Audience Profiling



## Consumer profiling by social content

### 寶寶大小事

可以自己一個人帶雙胞胎嗎？



好&妍媽咪 發表於2008-08-17 02:30:32

Gender?

Marriage?

Children?

21 F

Life Style?

Location?

版媽您好，我也是生雙胞胎，我家妹妹現在已經一歲又一個月，從出生都是我一個人帶，雖然有點累，但是，是自己的小孩，給我公婆帶我又不放心，前四個月很辛苦，我跟我先生半夜都要起來，泡奶換尿布，我先生還有泡牛奶，泡到在沙發上睡著了，因為真的太累了，白天又要上班，晚上睡沒幾個小時又要泡奶，後來四個月後，妹妹們半夜就比較沒有喝夜奶的習慣了，就比較好了，所以版媽加油囉！因為這是甜蜜的負擔啊！

“ 引用

↻ 回應

» Thank you

wyang@ntu.edu.tw

## 社群大數據

網路口碑及輿情分析

楊立偉、邵功新 著



成為社群口碑分析師的第一步

**Social Big Data: Listening & Analytics**

中華應用統計學會「社群口碑分析能力認證」指定用書

全書適用台灣最大之「OpView社群口碑資料庫」

本書內含意藍科技OpView資料庫（證照版）開通帳號