



MoF-DAC
Ministry of Finance
Data Analytic Community



DRONE EMPRIT

UNSTRUCTURED & STRUCTERED DATA ANALYTICS

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MoF-DAC SHARING SESSION #12

11 JUNI 2021



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Lahir: Bojonegoro, 1974

Founder Media Kernels Indonesia

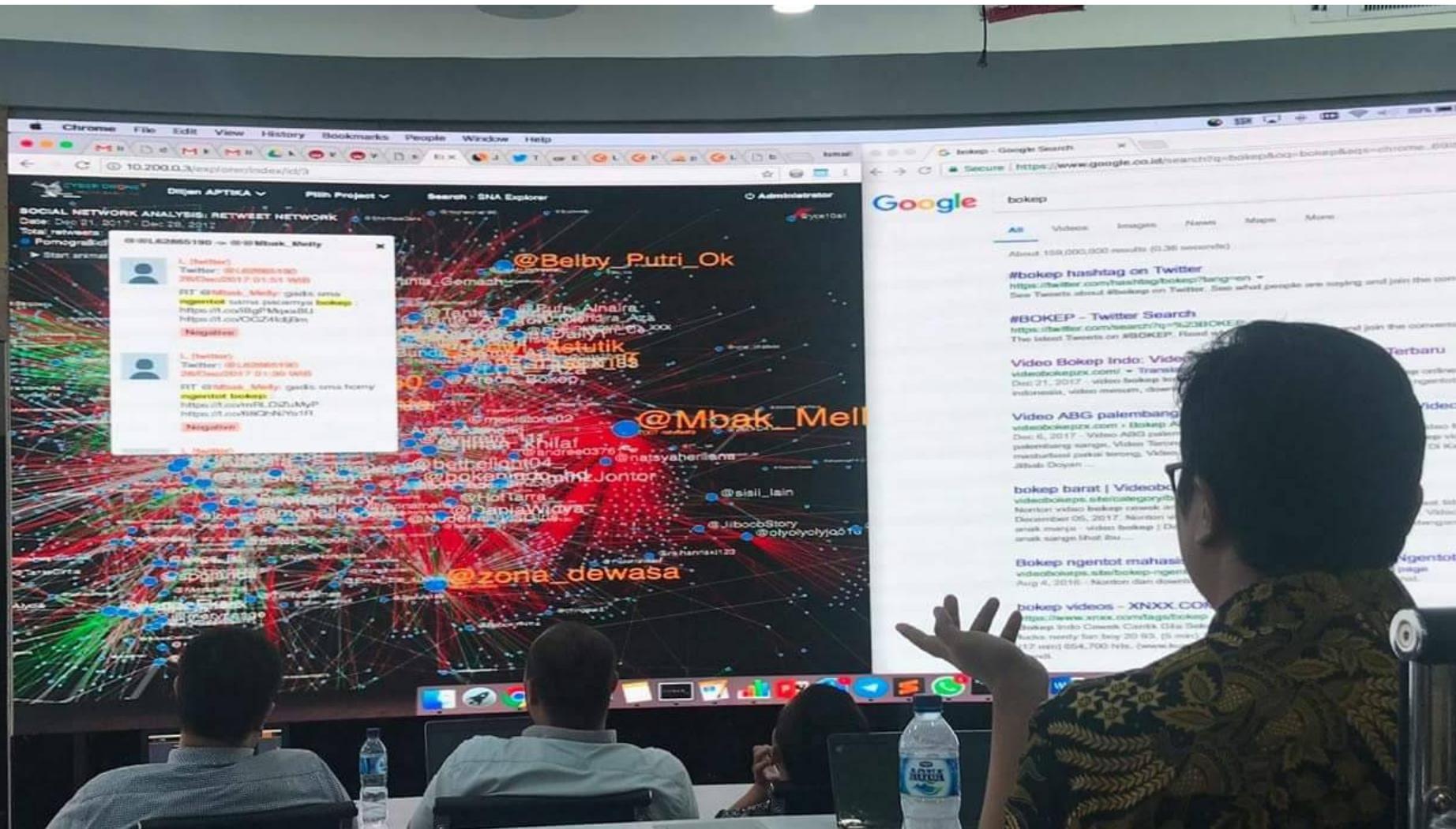
- | | |
|-----------------|--|
| 1992 – 1997 | S1, Teknik Elektro, ITB |
| 2003 – 2004 | S2, Information Science, Universitas Groningen, Belanda |
| 2004 – 2009 | S3, Information Science, Universitas Groningen, Belanda |
| 2000 – 2003 | Inisiator IndonesiaDLN (Digital Library Network pertama di Indonesia)
Mengembangkan Ganesha Digital Library (GDL)
Mendirikan Knowledge Management Research Group (KMRG) ITB
Membangun Digital Library ITB |
| 2009 – Sekarang | Engineer di Weborama, Perusahaan berbasis big data (Paris/Amsterdam) |
| 2014 – Sekarang | Founder PT. Media Kernels Indonesia, a Drone Emprit Company |
| 2015 – Sekarang | Konsultan Perpustakaan Nasional, Inisiator Indonesia OneSearch |
| 2017 – Sekarang | Dosen Tetap Magister Teknik Informatika Universitas Islam Indonesia |

AGENDA

- Tentang Drone Emprit
- Arsitektur sistem
- Implementasi
- Drone Emprit dalam artikel ilmiah

TENTANG DRONE EMPRIT

ON-PREMISE: SISTEM 'AIS' KOMINFO



ON-PREMISE: PUSDATIN KEMENHAN



SERVICE: COMMAND CENTER JAWA BARAT



CSR: COMMAND CENTER PP MUHAMMADIYAH YOGYAKARTA

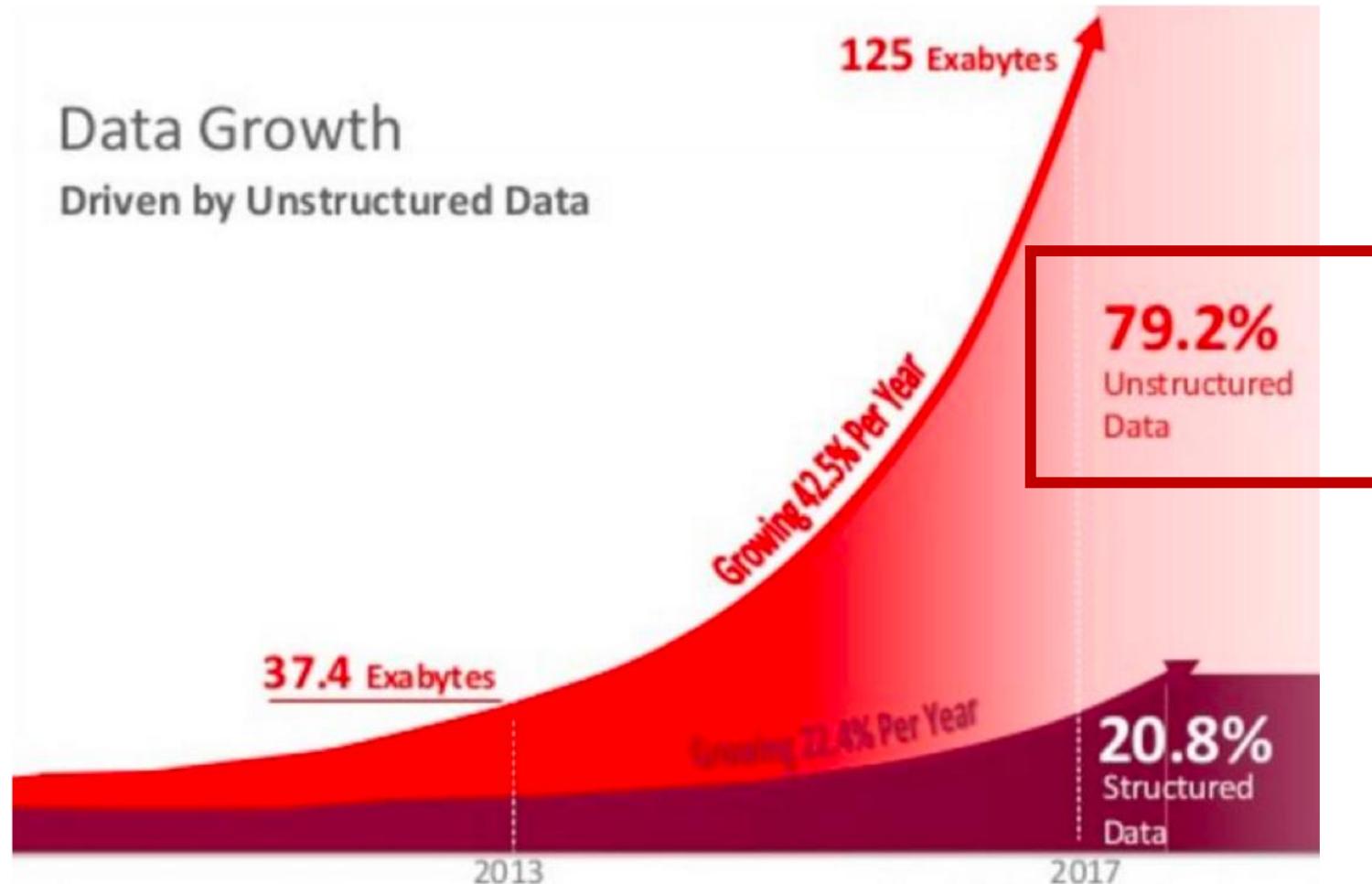


UNSTRUCTURED TEXT, GOLD, AND JOBS

DATA GROWTH: UNSTRUCTURED DATA

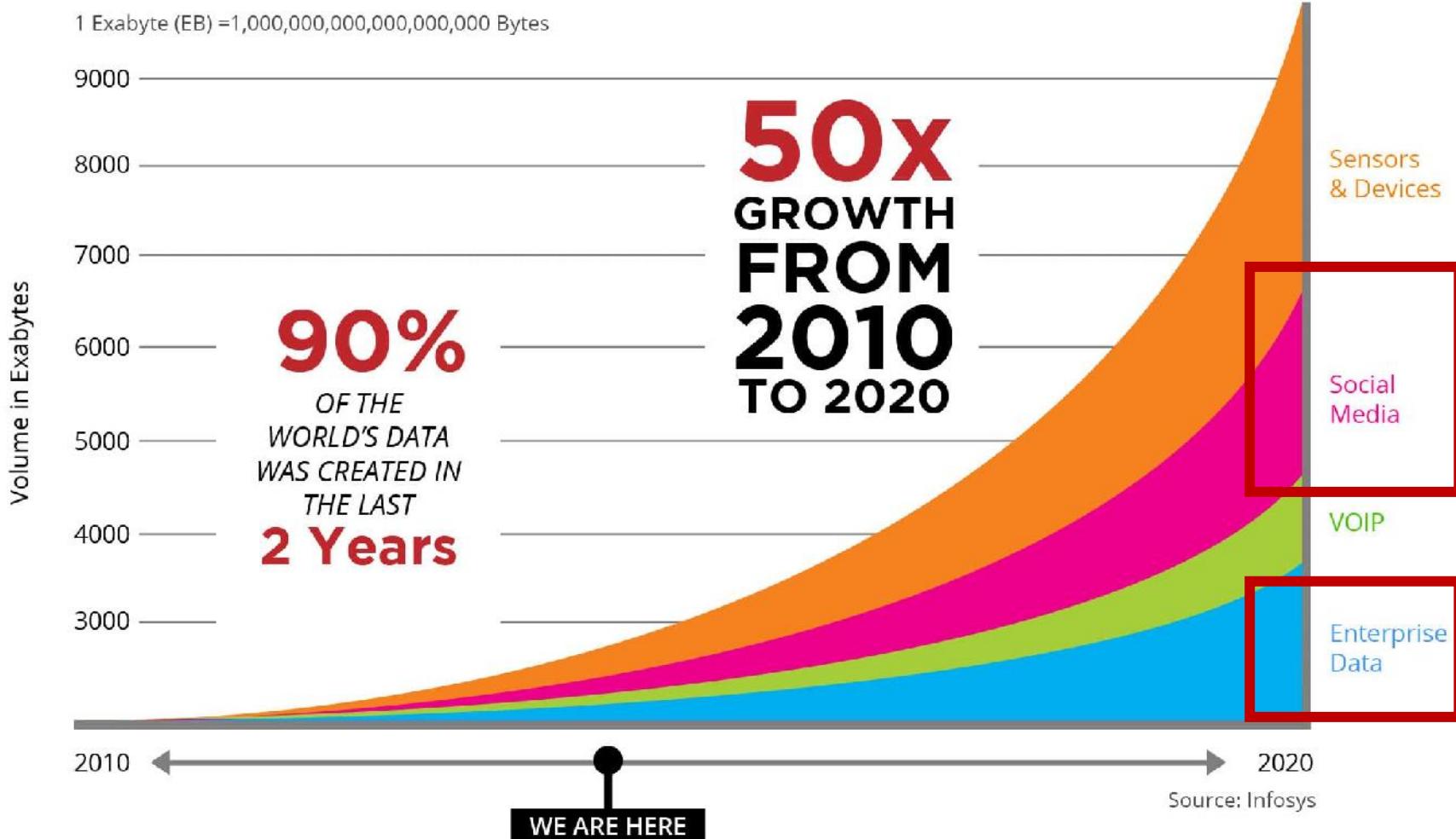
Data Growth

Driven by Unstructured Data



Source: ISD - 2014, Structured Data vs. Unstructured Data: The Balance of Power Continues to Shift

BIG DATA – BIG GROWTH



DATA IS THE NEW GOLD

- Ini benar kalau kita bisa mengolahnya menjadi insight.
- Ini salah kalau kita “mati gaya” di depan data, tidak punya ide bagaimana memanfaatkannya.
- Jadi selain data itu sendiri, kita perlu seorang “Alchemist” yang bisa mengubahnya menjadi “emas.”
- Dia adalah: data scientist.



“DATA IS THE NEW GOLD”

DATA SCIENTIST MUST-HAVE SKILLS

MATH & STATISTICS

- Machine Learning
- Statistical Modeling
- Exploratory Analysis
- Clustering
- Regression Analysis

DOMAIN KNOWLEDGE & SOFT SKILLS

- Inclination towards business operations
- Keen on working with data
- Problem solver
- Strategic, proactive, and cooperative
- Interested in hacking



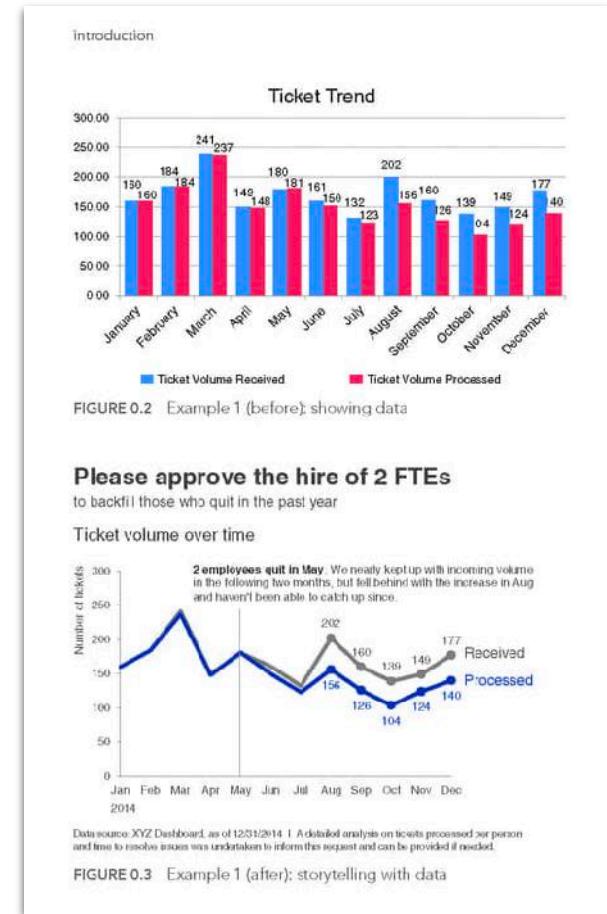
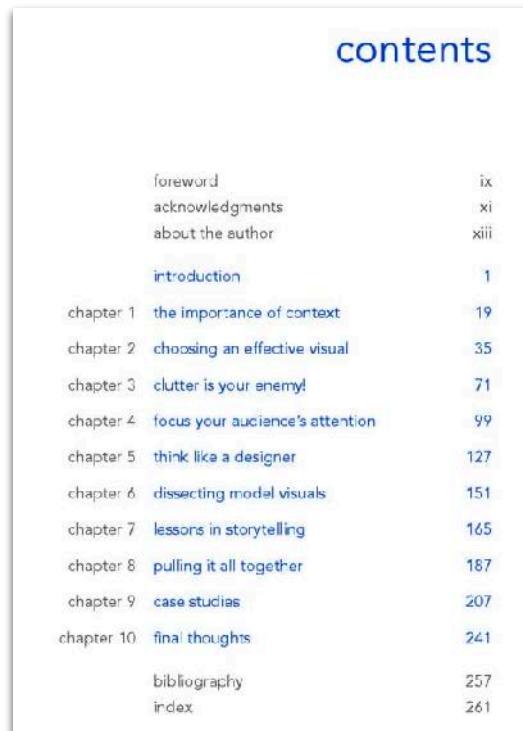
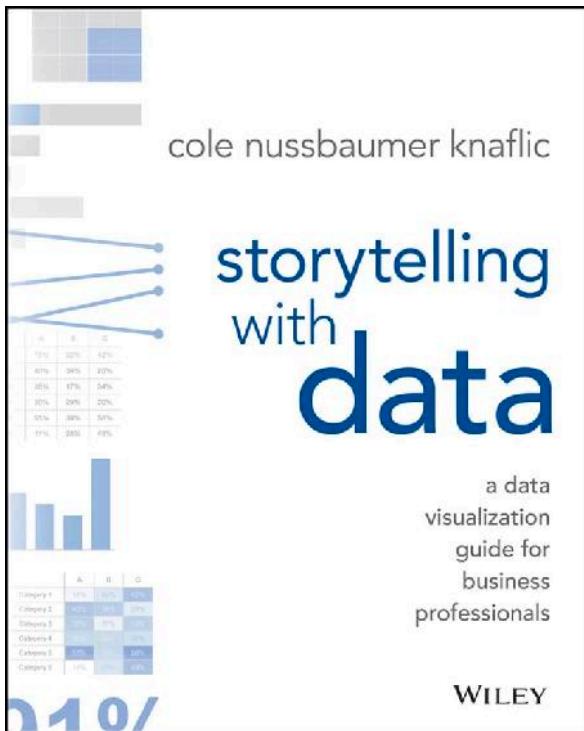
PROGRAMMING & DATABASE

- Computer Science Fundamentals
- Database Management System
- Data Visualization
- Python
- Big Data

COMMUNICATION & VISUALIZATION

- Storytelling skills
- Convert data-based insights into decisions
- Collaborative with Sr. Management
- Knowledge of tools like Tableau
- Visual art design

RECOMMENDED BOOK



THE STATE OF THE DATA SCIENTIST

TOP PRIMARY SKILLS

1. Data Analysis
2. R
3. Python
4. Data Mining
5. Machine Learning

TOP EDUCATIONAL BACKGROUNDS

1. Computer Science
2. Business Admin
3. Statistics
4. Mathematics
5. Physics



HIGHEST EDUCATION LEVEL

- | | |
|-----------|-----|
| Bachelors | 20% |
| Masters | 42% |
| PhD | 38% |

INDUSTRY GROWTH



TOP INDUSTRIES EMPLOYING DATA SCIENTISTS

1. Information Technology & Services
2. Internet
3. Computer Software
4. Education
5. Banking & Financial Services

TEXT PROCESSING

RECOMMENDED BOOK

Speech and Language Processing: An Introduction to Natural Language Processing, Computational Linguistics and Speech Recognition

by Dan Jurafsky and James H. Martin

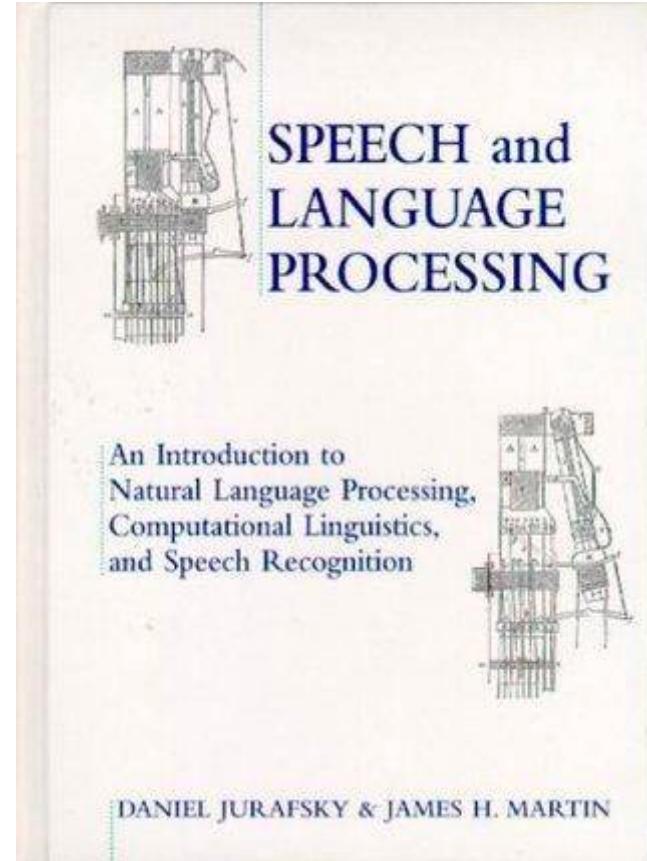
This book offers a unified vision of speech and language processing covering statistical and symbolic approaches to language processing, and presents algorithms and techniques for speech recognition, spelling and grammar correction, information extraction, search engines, machine translation, and the creation of spoken-language dialog agents.

Target readers:

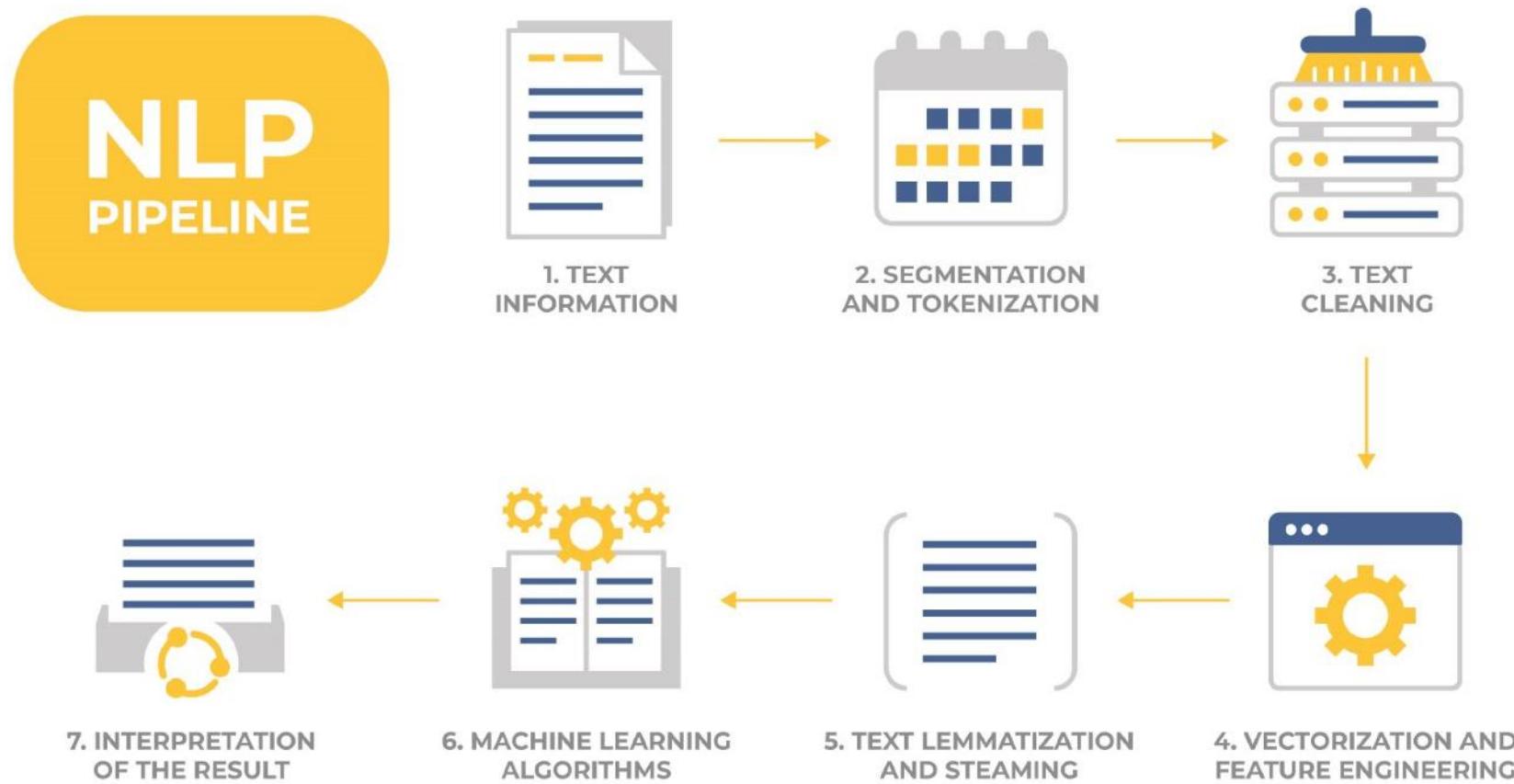
- Beginners in natural language and speech processing

Why it is good:

- The book provides a solid foundational knowledge as it introduces linguistics, computer science and statistics at comprehensive depth.



TAHAPAN DALAM NLP



BASIC TEXT PROCESSING

- Regular Expressions
- Word Tokenization
- Word Normalization and Stemming
- Sentence Segmentation and Decision Trees

Dan Jurafsky

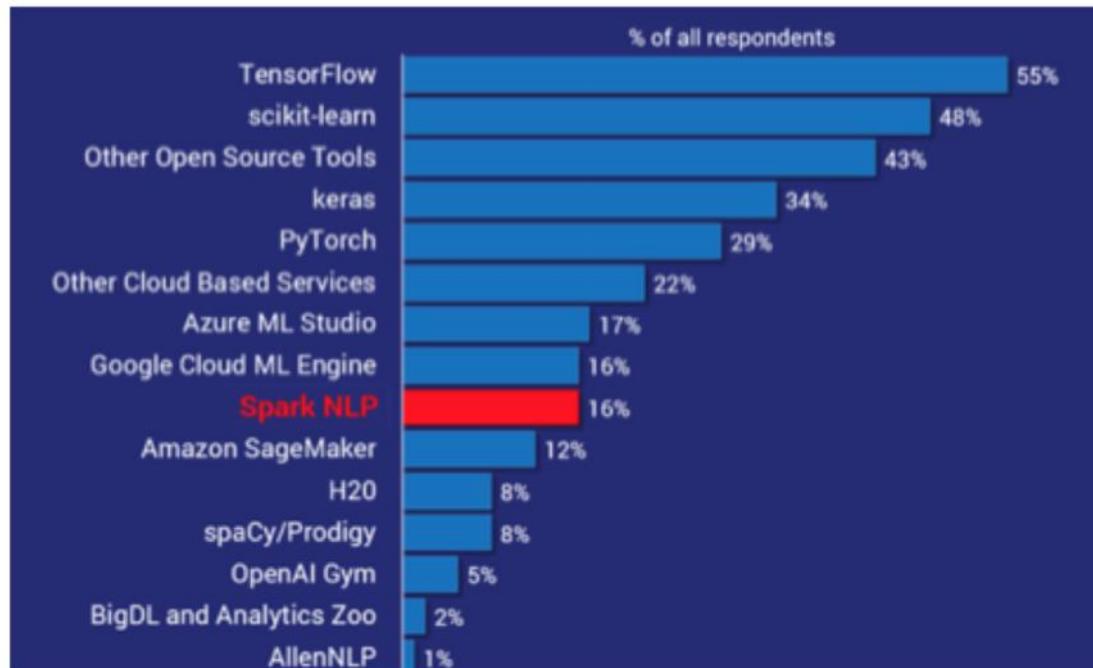


TEXT PROCESSING (MORE)

- Part-of-speech tagging (POS Tagging)
- Named Entity Recognition (NER)
- Dependency Parser
- Spell Checker
- Sentiment Analysis

TOOLS TEXT MINING

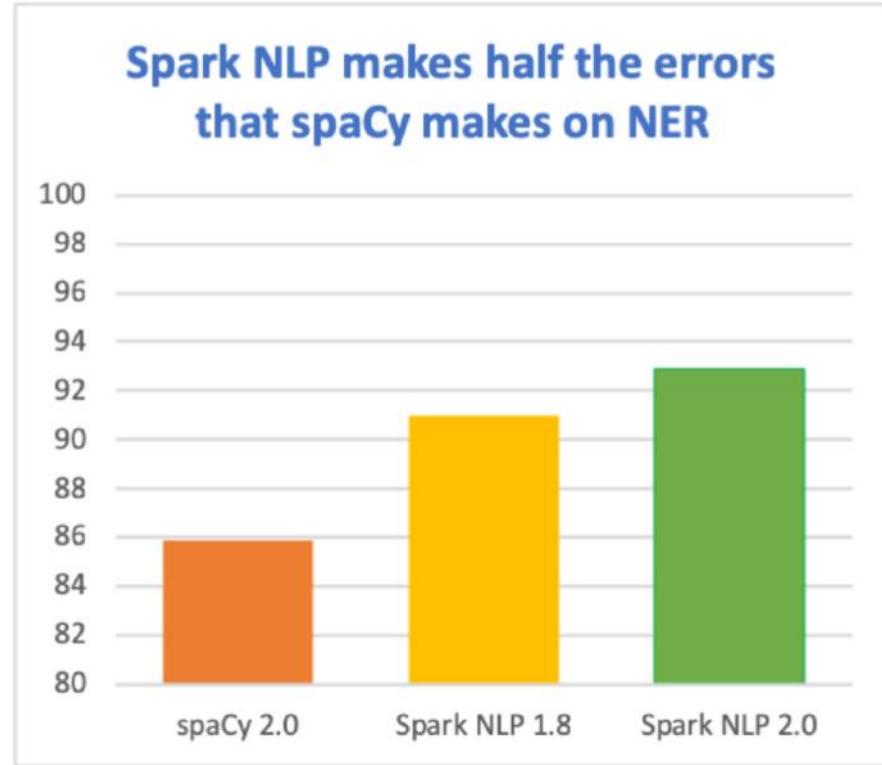
5th MOST WIDELY USED AI LIBRARY IN THE ENTERPRISE



O'REILLY [AI ADOPTION IN THE ENTERPRISE](#) SURVEY OF 1,300 PRACTITIONERS, FEB 2019

AKURASI SPARK NLP (UNTUK NER)

- "State of the art" means the best performing academic peer-reviewed results
- NER Benchmark on right is on `en_core_web_lg` dataset, micro-averaged F1 score
- Why is it more accurate?
 - Deep learning models, trainable at scale with GPU's
 - TF graph based on 2017 paper (bi-LSTM+CNN+CRF)
 - BERT embeddings
 - Contrib LSTM cells



KEMAMPUAN SPARK NLP DALAM TEXT PROCESSING

Name	NLTK	spaCy	CoreNLP	Spark NLP
Sentence Detection	Yes	Yes	Yes	Yes
Tokenization	Yes	Yes	Yes	Yes
Stemming	Yes	Yes	Yes	Yes
Lemmatization	Yes	Yes	Yes	Yes
POS Tagger	Yes	Yes	Yes	Yes
NER	Yes	Yes	Yes	Yes
Dependency Parse	Yes	Yes	Yes	Yes
Text Matcher	No	No	Yes	Yes
Date Matcher	No	No	Yes	Yes
Chunking	Yes	Yes	Yes	Yes
Spell Checker	No	No	No	Yes
Sentiment Detector	No	No	Yes	Yes
Pre-trained Models	Yes	Yes	Yes	Yes
Training Models	Yes	Yes	Yes	Yes

CONTOH: NAMED ENTITY RECOGNITION

```
# Import Spark NLP
from sparknlp.base import *
from sparknlp.annotator import *
from sparknlp.pretrained import PretrainedPipeline
import sparknlp

# Start Spark Session with Spark NLP
spark = sparknlp.start()

# Download a pre-trained pipeline
pipeline = PretrainedPipeline('explain_document_dl', lang='en')

# Your testing dataset
text = """
The Mona Lisa is a 16th century oil painting created by Leonardo.
It's held at the Louvre in Paris.
"""

# Annotate your testing dataset
result = pipeline.annotate(text)

# What's in the pipeline
list(result.keys())
Output: ['entities', 'stem', 'checked', 'lemma', 'document',
'pos', 'token', 'ner', 'embeddings', 'sentence']

# Check the results
result['entities']
Output: ['Mona Lisa', 'Leonardo', 'Louvre', 'Paris']
```

Inisiasi

Input Text

Anotasi (processing)

Tipe output

NER output

SENTIMENT ANALYSIS

```
import sparknlp  
sparknlp.start()  
  
from sparknlp.pretrained import PretrainedPipeline  
pipeline = PretrainedPipeline('analyze_sentiment_ml', 'en')  
result = pipeline.annotate('Harry Potter is a great movie')  
  
print(result['sentiment']) # will print ['positive']
```

1. `sparknlp.start()` starts a new Spark session if there isn't one, and returns it.
2. `PretrainedPipeline()` loads the English version of the `recognize_entities_bert` pipeline, the pre-trained models, and the embeddings it depends on.
3. These are stored and cached locally – or distributed if running on a cluster.
4. TensorFlow is initialized, within the same JVM process that runs Spark.
The pre-trained embeddings and deep-learning models (like NER) are loaded.
5. The `annotate()` call runs an NLP inference pipeline which activates each stage's algorithm (tokenization, POS, etc.).

NAMED ENTITY RECOGNITION

Chandler PERSON and Monica PERSON met in Central Perk LOC .

```
pipeline = PretrainedPipeline('recognize_entities_bert', 'en')
result = pipeline.annotate('Harry Potter is a great movie')

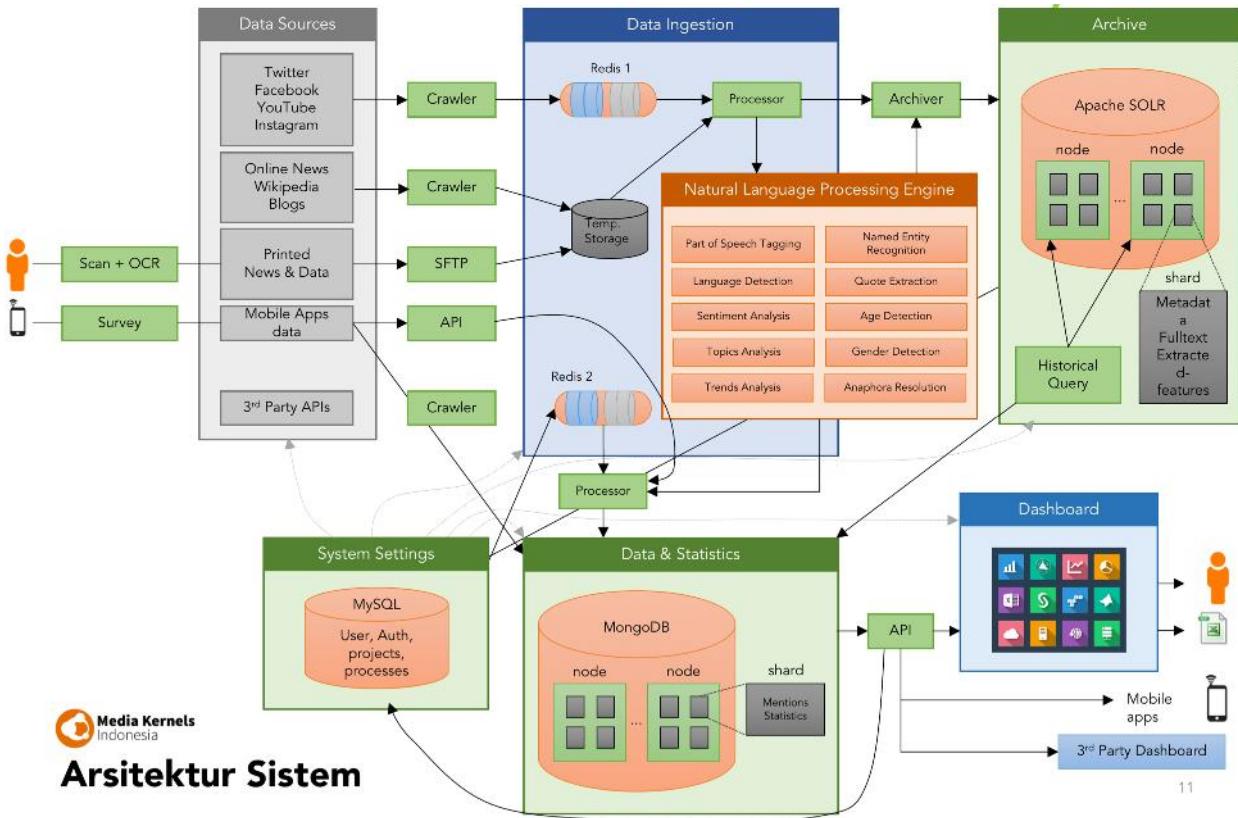
print(result['ner'])
# prints ['I-PER', 'I-PER', 'O', 'O', 'O', 'O']
```

6. The NER stage is run on TensorFlow – applying a neural network with bi-LSTM layers for tokens and a CNN for characters.
7. BERT Embeddings are used to convert *contextual* tokens into vectors during the NER inference process.
8. The `result` object is a plain old local Python dictionary.

NLP DI DRONE EMPRIT / MEDIA KERNELS

ARSITEKTUR SISTEM

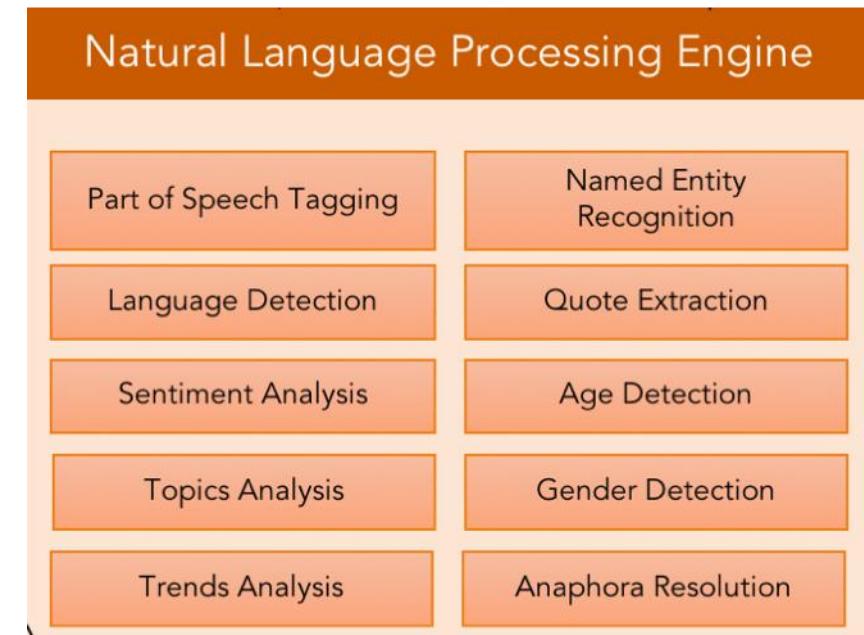
Ini adalah gambaran sistem yang digunakan untuk membangun Knowledge Explorer Indonesia OneSearch (IOS). Khusus untuk IOS, sumber datanya adalah fullteks dalam bentuk teks abstrak dan file PDF dari artikel jurnal, tesis, disertasi, dll.



TEKNOLOGI NLP

Teknologi yang digunakan untuk mengekstrak fakta dari teks menggunakan NLP (Natural Language Processing), yang meliputi proses-proses berikut:

- Segmentation
- Part-Of-Speech (POS) Tagging
- Automatic Term Recognition (ATR)
- Named Entity Recognition (NER)
- Term Relationship Extraction
- Syntax Analysis (S-P-O)



CONTOH: UNSTRUCTURED TEXT

KANZ PHILOSOPHIA, Volume 3, Number 2, December 2013 201

KEWALIAN DALAM TASAWUF NUSANTARA

Artikel ini mendiskusikan dokrin Kewalian (al-walāyah) yang mempunyai basis yang kuat dalam al-Qur'an dan hadis dan isu ini secara sistematis dibahas melalui ajaran Ibn 'Arabi yang kompleks.

Sementara dalam kajian tasawuf di Nusantara, sebutan wali ini sudah mulai dikenal bersamaan dengan masuknya Islam ke negeri ini yang mengacu kepada dua pengertian, wali sebagai orang yang memiliki kesaktian-kesaktian (occulties) sebagai implikasi dari kekeramatannya dan wali sebagai penguasa wilayah tertentu. Terlepas dari pengertian dan cakupannya, ajaran kewalian yang sesungguhnya tidak lepas dari ajaran tentang kenabian dan kerasulan yang menyiratkan pesan bahwa dunia manusia bukan hanya dunia material yang identik dengan kenikmatan hedonis, tetapi di balik dunia fisik terdapat dunia metafisik yang belum banyak diketahui manusia dan dari sanalah dunia fisik ini dikendalikan.

Kata-kata Kunci : wali, karamah, Nur Muhammad, kewalian, kenabian, penutup para wali
Fakultas Ushuluddin, UIN Syarif Hidayatullah. E-mail : yunasrilali@ymail.com

SEGMENTATION: PARAGRAPH

=====page1=====

-----par-----

KANZ PHILOSOPHIA, Volume 3, Number 2, December 2013 201

-----par-----

KEWALIAN DALAM TASAWUF NUSANTARA

-----par-----

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-----par-----

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-----par-----

Kata-kata Kunci : wali, karamah, Nur Muhammad, kewalian, kenabian, penutup para wali 1 Fakultas Ushuluddin, UIN Syarif Hidayatullah. E-mail : yunasrilali@ymail.com

SEGMENTATION: SENTENCE

-----par-----

Sementara dalam kajian tasawuf di Nusantara, sebutan wali ini sudah mulai dikenal bersamaan dengan masuknya Islam ke negeri ini yang mengacu kepada dua pengertian, wali sebagai orang yang memiliki kesaktian-kesaktian (occulties) sebagai implikasi dari kekeramat dan wali sebagai penguasa wilayah tertentu.

Terlepas dari pengertian dan cakupannya, ajaran kewalian yang sesungguhnya tidak lepas dari ajaran tentang kenabian dan kerasulan yang menyiratkan pesan bahwa dunia manusia bukan hanya dunia material yang identik dengan kenikmatan hedonis, tetapi di balik dunia fisik terdapat dunia metafisik yang belum banyak diketahui manusia dan dari sanalah dunia fisik ini dikendalikan.

PART-OF-SPEECH TAGGING

----- par -----

Sementara_SC dalam_IN kajian_NN tasawuf_VB di_IN Nusantara_NNP ,_Z sebutan_NN
wali_NN ini_PR sudah_MD mulai_VB dikenal_VB bersamaan_VB dengan_IN masuknya_X
Islam_NNP ke_IN negeri_NN ini_PR yang_SC mengacu_VB kepada_IN dua_CD
pengertian_NN ,_Z wali_NN sebagai_IN orang_NN yang_SC memiliki_VB kesaktian-
kesaktian_NN -LRB-_ -LRB- occulties_FW -RRB-_ -RRB- sebagai_IN implikasi_NN dari_IN
kekeramatan_NN dan_CC wali_NN sebagai_IN penguasa_NN wilayah_NN tertentu_PR ._Z

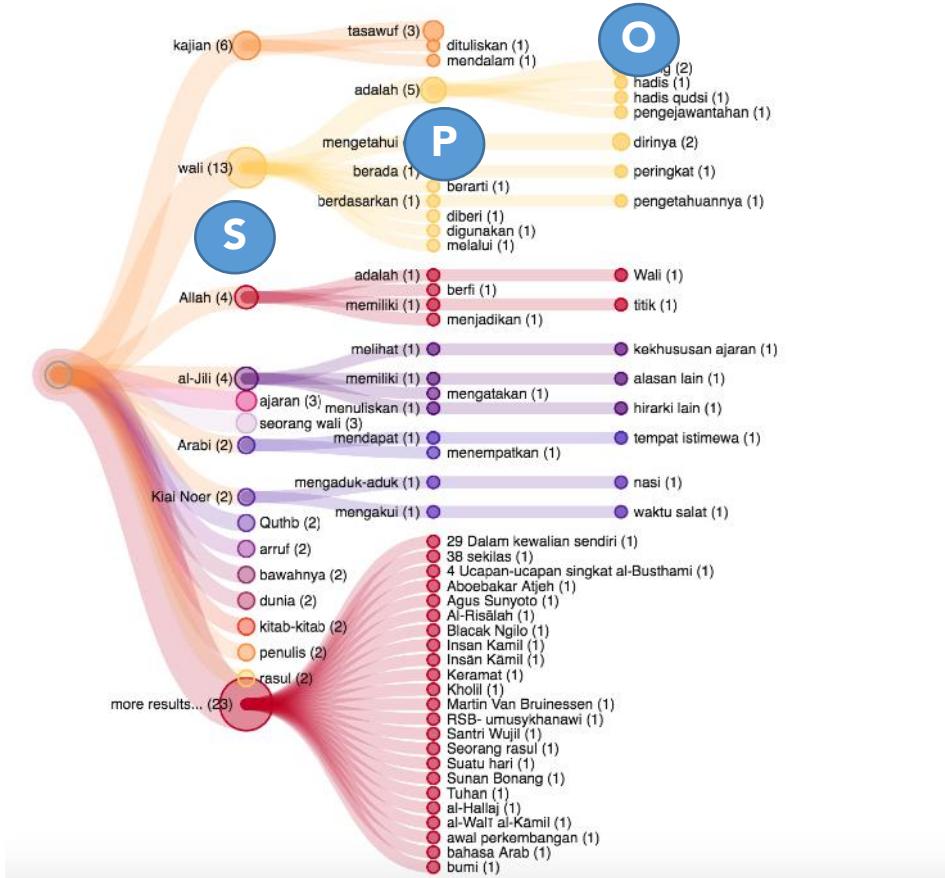
Terlepas_VB dari_IN pengertian_NN dan_CC cakupannya_NN ,_Z ajaran_NN kewalian_NN
yang_SC sesungguhnya_RB tidak_NEG lepas_VB dari_IN ajaran_NN tentang_IN
kenabian_NN dan_CC kerasulan_NN yang_SC menyiratkan_VB pesan_NN bahwa_SC
dunia_NN manusia_NN bukan_NEG hanya_RB dunia_NN material_NN yang_SC identik_JJ
dengan_SC kenikmatan_NN hedonis_JJ ,_Z tetapi_CC di_IN balik_NN dunia_NN fi_X sik_X
terdapat_VB dunia_NN metafi_VB sik_X yang_SC belum_NEG banyak_CD diketahui_VB
manusia_NN dan_CC dari_IN sanalah_NN dunia_NN fi_X sik_X ini_PR dikendalikan_VB ._Z

S-P-O TRIPLE

Grafik di kanan ini adalah tree-map, dari relasi subyek, predikat, dan obyek yang berhasil diekstrak dari fullteks.

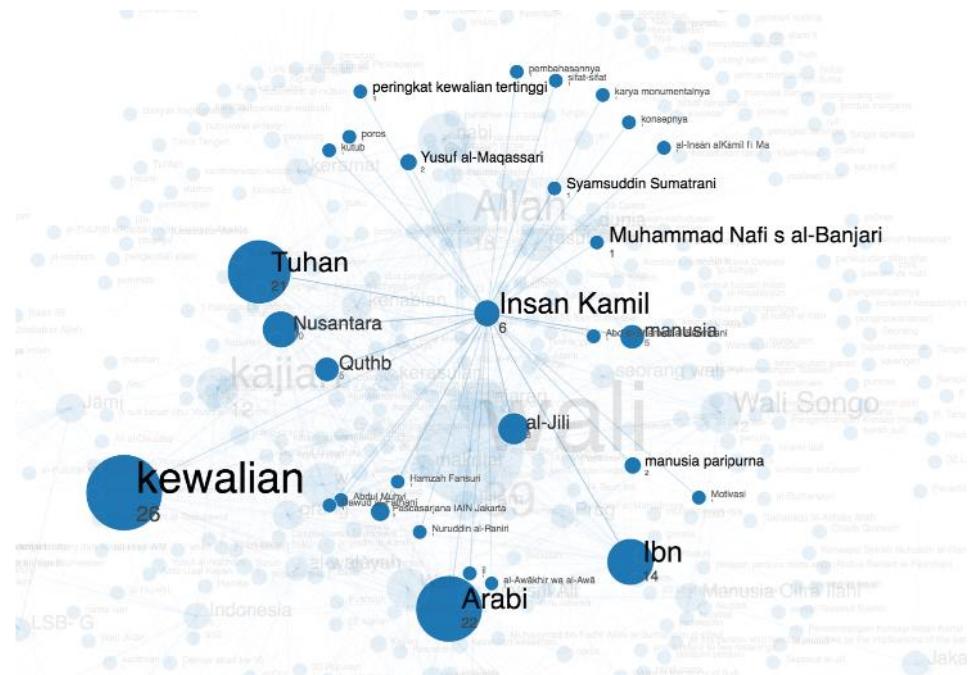
Manfaat dari tree map ini adalah pengguna bisa mendapat insight dengan cepat tentang:

- Aktor person, organisasi, konsep (subyek)
- Aktifitas terkait dengan aktor
- Obyek atau related entitis terkait aktivitas subyek.



CO-OCCURRENCE ANTAR KONSEP

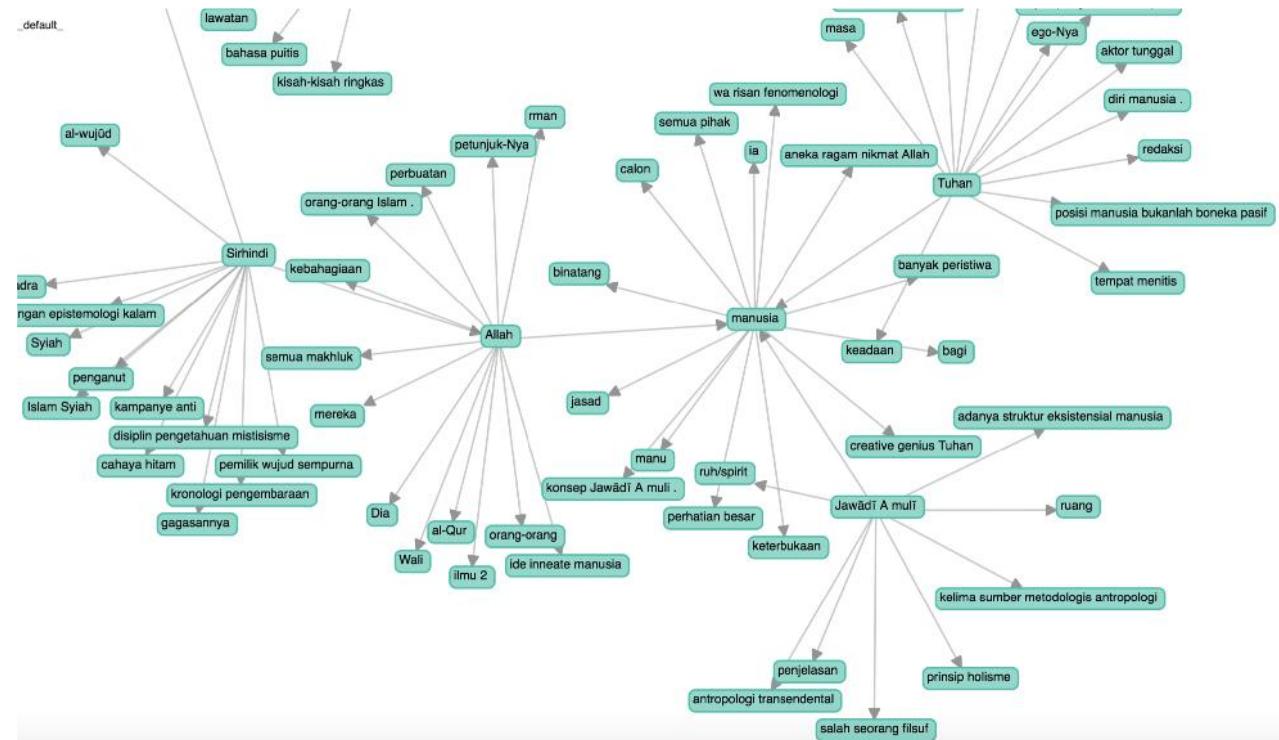
- Menampilkan aktor, lokasi, dan istilah penting yang sering muncul bersamaan (dalam kalimat atau paragraph yang sama).
- Co-occurrence menjadi indikasi adanya korelasi yang kuat antar pelaku dan istilah.
- Namun, jenis korelasinya apa, belum bisa dilihat di sini.



DIRECTED GRAPH

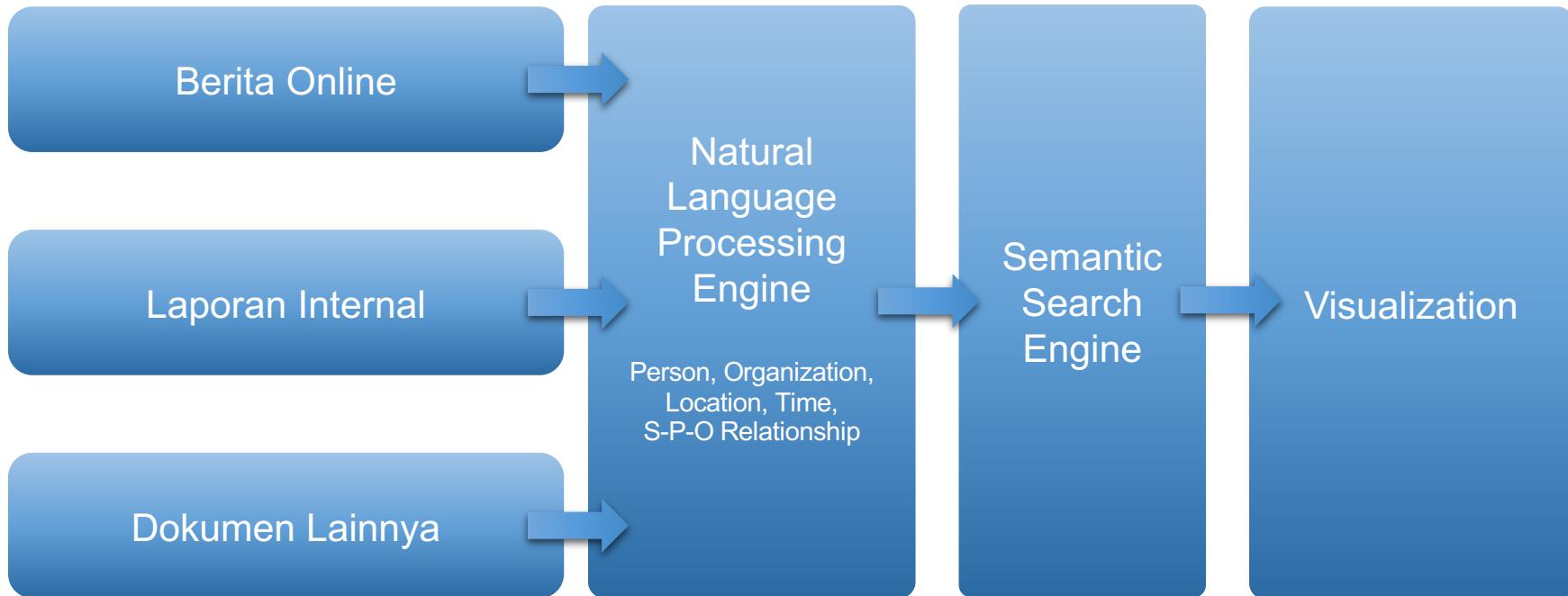
Grafik ini menghubungkan Subyek dan Obyek yang saling berhubungan melalui predikat. Dalam grafik, predikat ditampilkan sebagai garis yang memiliki anak panah, dari subyek ke obyek.

Relasi antar S dan O dalam sebuah knowledge base yang besar bisa memperlihatkan relasi dalam lingkup yang lebih besar.

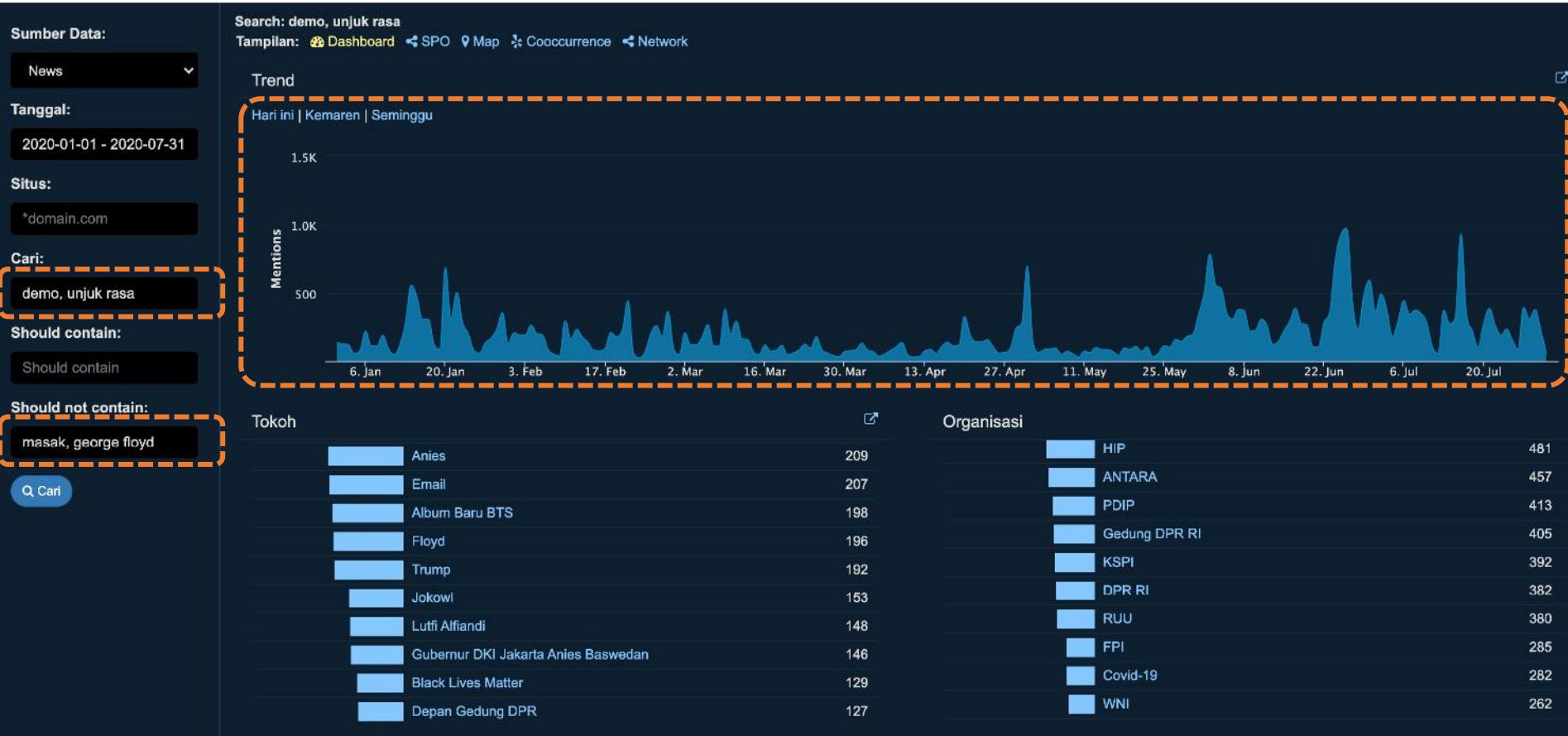


FACTMINER DRONE EMPRIT

DIAGRAM SISTEM



CONTOH PENCARIAN: DEMO, UNJUK RASA



Tren "demo atau unjuk rasa" selama tahun 2020 hingga hari ini. Kecenderungan naik mulai bulan Mei 2020. Siapa tokoh dalam berita dan organisasi diekstrak dari dokumen.

ENTITAS PERISTIWA, WAKTU, DAN LOKASI

Sumber Data:

News

Tanggal:

2020-01-01 - 2020-07-31

Situs:

*domain.com

Carl:

demo, unjuk rasa

Should contain:

Should contain

Should not contain:

masak, george floyd

Cari

Peristiwa

Peristiwa	#
melakukan	5520
menggelar	4867
menolak	2711
ada	2283
dilakukan	2030
terjadi	1754
terkait	1618
tergabung	1472
menuntut	1404

Kata Sifat

Keyword	#
unjuk	13472
besar	765
sosial	760
besar-besaran	744
salah	664
damai	611
lain	484
tua	401
anti	369

Waktu

Waktu	#
Rabu	2937
Senin	2810
Kamis	2111
Selasa	2068
Jumat	2022
Sabtu	807
Minggu	609
21 Februari 2020	352
30 April 2020	219

Lokasi

Lokasi	#
Jakarta	2924
Demo	1464
Indonesia	618
Puluhan	550
Gedung DPR	514
China	385
Papua	336
Jawa Barat	322
Amerika	299

Selain tokoh dan organisasi, FactMiner juga mengekstrak peristiwa dalam berita, waktu, dan lokasi.

CONTOH FAKTA DARI ARTIKEL



Sumber Data:

News

Tanggal:

2020-01-01 - 2020-07-31

Situs:

*domain.com

Cari:

demo, unjuk rasa

Should contain:

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Cari

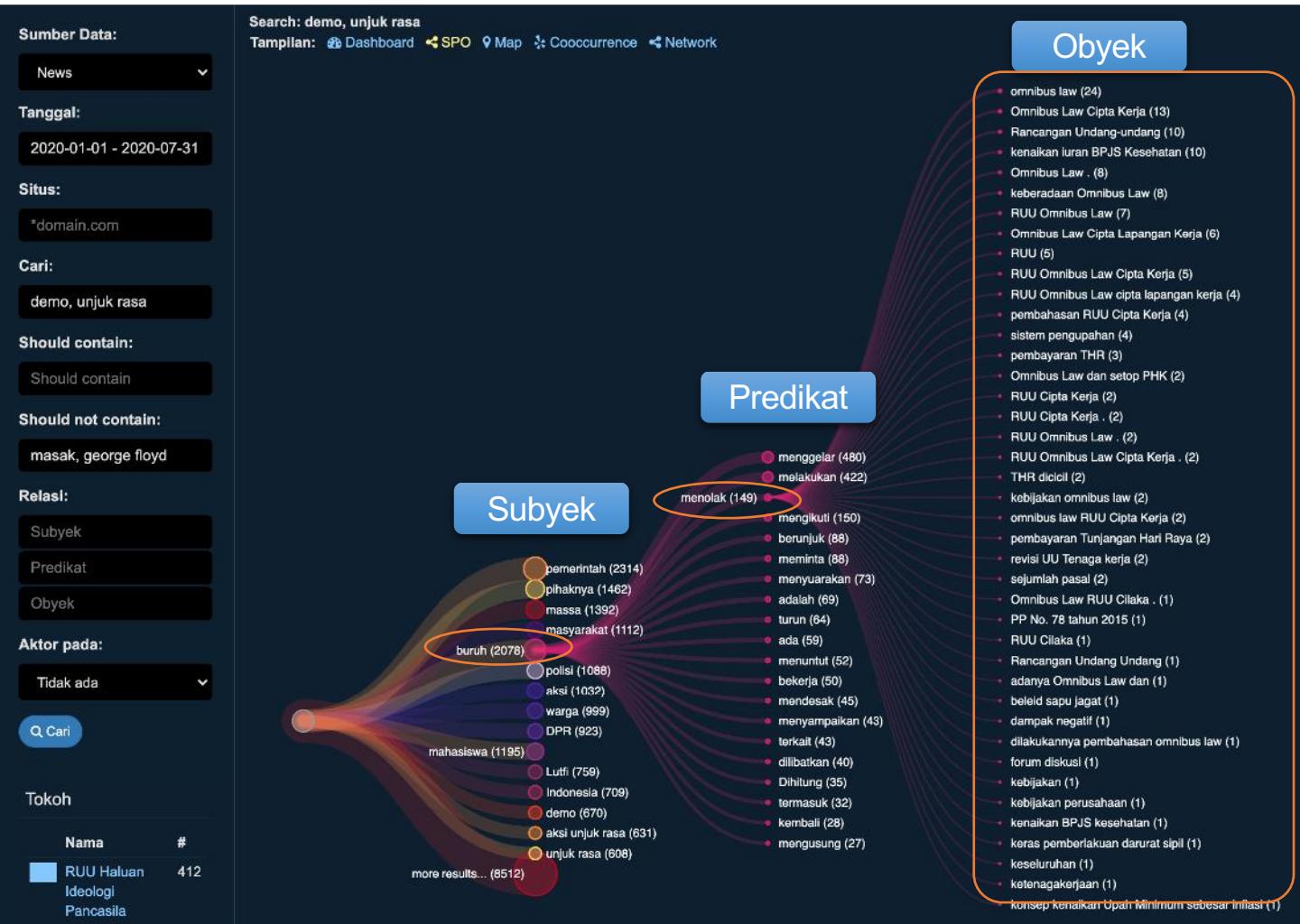
Mentions

Sumber Teks

		Tokoh Organisasi	Lokasi	Tanggal
doc	Silahkan mau demo, unjuk rasa , mau konsultasi. (akurat.co)			10-03-2020 00:20
doc	Silakan mau demo, unjuk rasa , mau konsultasi. (www.antaranews.com)			09-03-2020 22:34
doc	" Belum sempat ada demo unjuk rasa-red . (belitung.tribunnews.com)			30-03-2020 11:13
doc	" Belum sempat ada demo unjuk rasa-red . (belitung.tribunnews.com)			30-03-2020 11:13
doc	" Belum sempat ada demo unjuk rasa-red . (bangka.tribunnews.com)			30-03-2020 11:20
doc	Bukan aksi penolakan pembongkaran, bukan demo atau unjuk rasa . (www.solopos.com)			25-02-2020 18:28
doc	Salah satu kegiatannya seperti unjuk rasa atau demo, & ; terangnya. (pojoksatu.id)			20-04-2020 22:20
doc	Biasanya hari buruh diperingati aksi unjuk rasa atau demo (jateng.tribunnews.com)			03-05-2020 16:40
doc	Unjuk rasa yang berawal damai, akhirnya demo memanas dan rusuh. (harianmomentum.com)	Unjuk		27-07-2020 13:14
doc	Teman-teman mungkin berpikir demokrasi berkaitan dengan unjuk rasa atau demo-demo yang biasanya dilakukan di jalan raya. (www.kompasiana.com)			18-04-2020 21:16
doc	Aksi unjuk rasa ini merupakan lanjutan dari demo yang dilakukan jutaan orang sejak Juni 2019. (www.cnnindonesia.com)			02-01-2020 03:42
doc	Aksi unjuk rasa ini merupakan lanjutan dari demo yang dilakukan jutaan orang sejak Juni 2019. (www.cnnindonesia.com)			02-01-2020 20:54
doc	Aksi unjuk rasa ini merupakan lanjutan dari demo yang dilakukan jutaan orang sejak Juni 2019. (www.cnnindonesia.com)			02-01-2020 08:06
doc	Menurutnya, perihal unjuk rasa atau demo memang diperbolehkan oleh Undang-Undang. (mediaindonesia.com)	Undang-Undang		14-01-2020 13:12
doc	Diketahui, unjuk rasa atau demo diinisiasi oleh Politikus PDIP Dewi Tanjung. (mediaindonesia.com)	Politikus PDIP Dewi Tanjung		14-01-2020 14:13

Dalam kalimat mana di dokumen sumber terdapat kata kunci yang dicari.

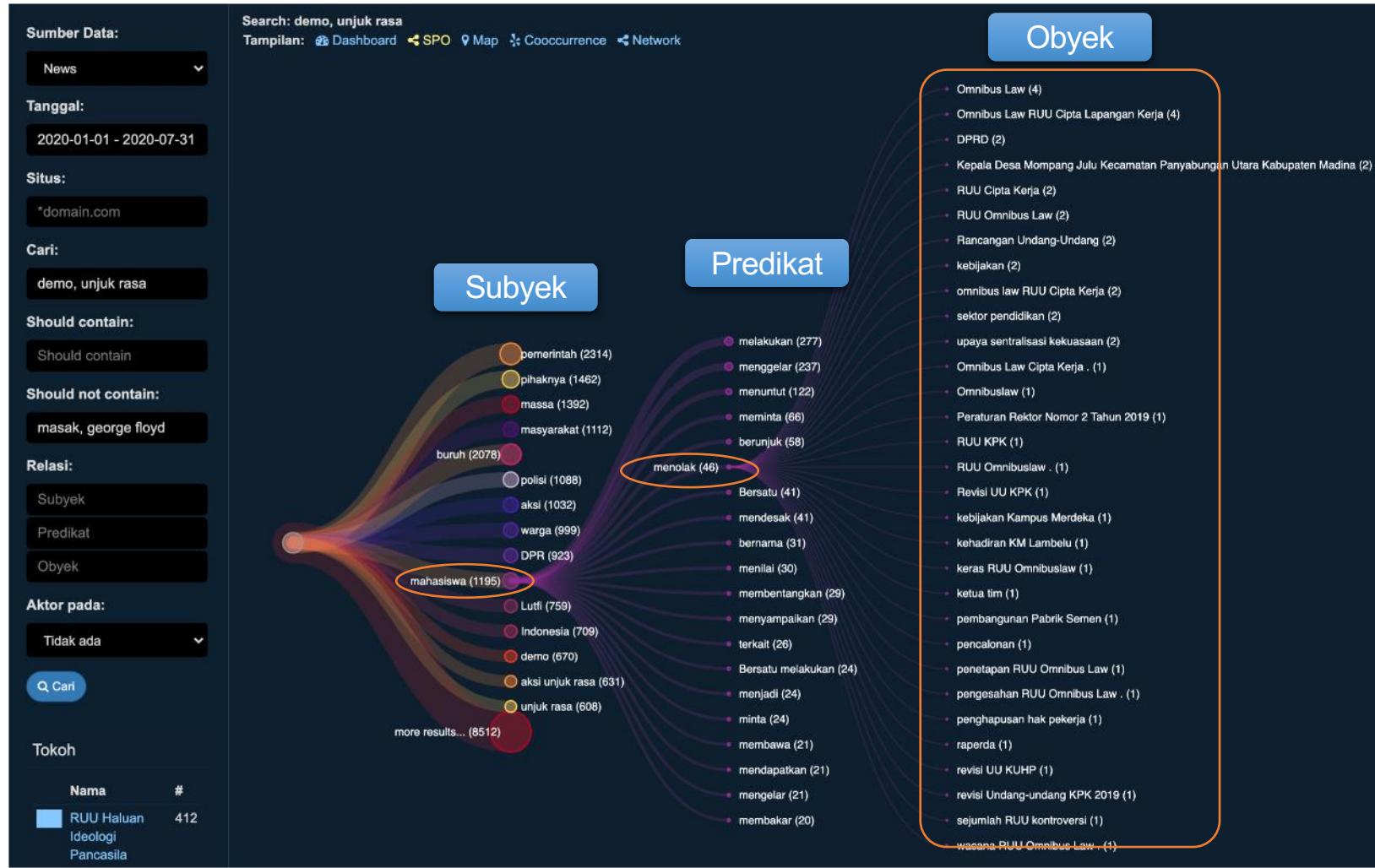
EKSPLORASI PERISTIWA DALAM DOKUMEN



Contoh:

Subyek = buruh
Predikat = menolak
Obyek = sebagian besar tentang Omnibus Law, UU Cilaka, Kenaikan BPJS

CONTOH: MAHASISWA MENOLAK



SEBARAN PERISTIWA DEMO DI INDONESIA



Sumber Data:

News

Tanggal:

2020-01-01 - 2020-07-31

Situs:

*domain.com

Cari:

demo, unjuk rasa

Should contain:

Should contain

Should not contain:

masak, george floyd

Relasi:

Subjek

Predikat

Obyek

Aktor pada:

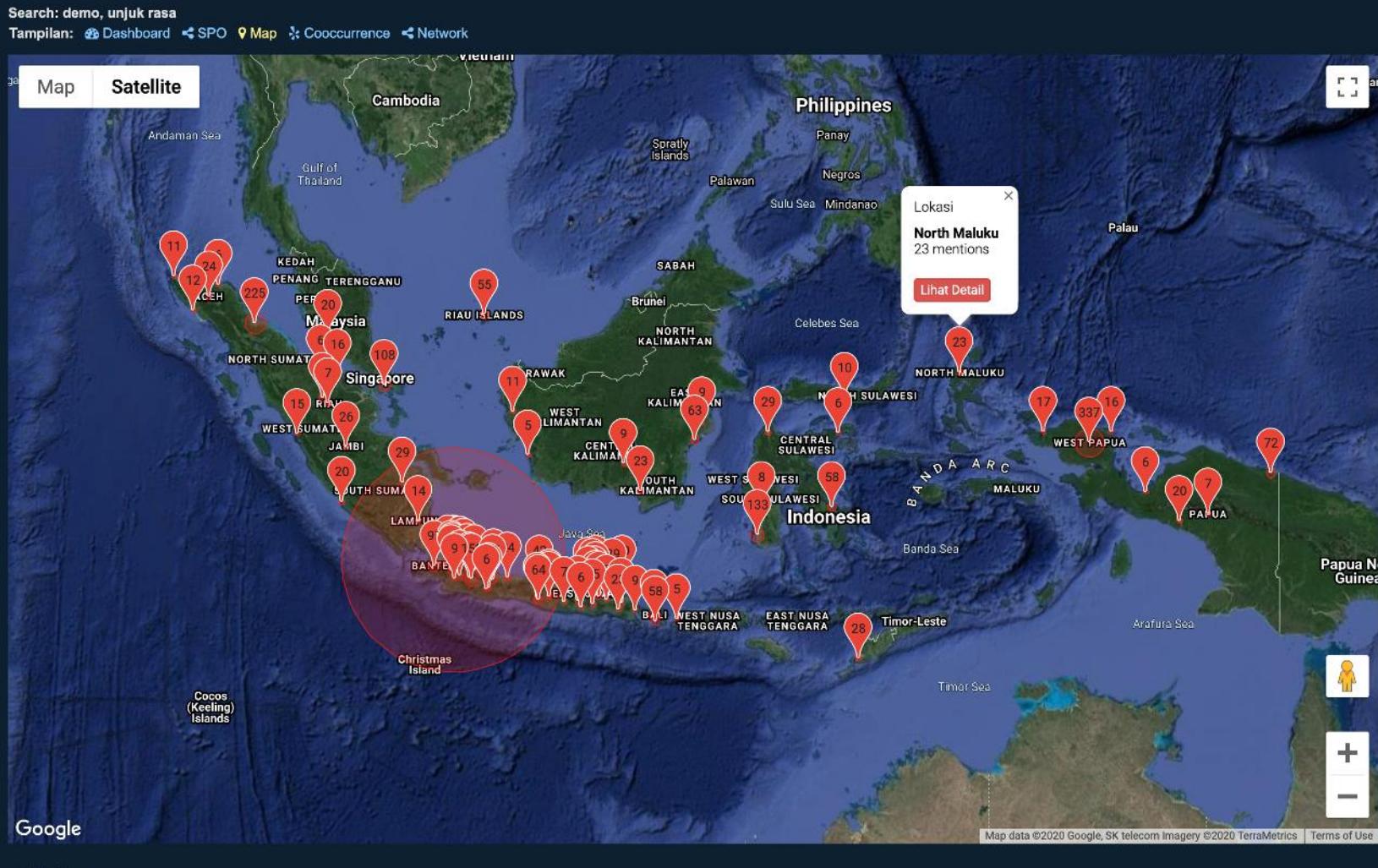
Tidak ada

Q Cari

Tokoh

Nama #

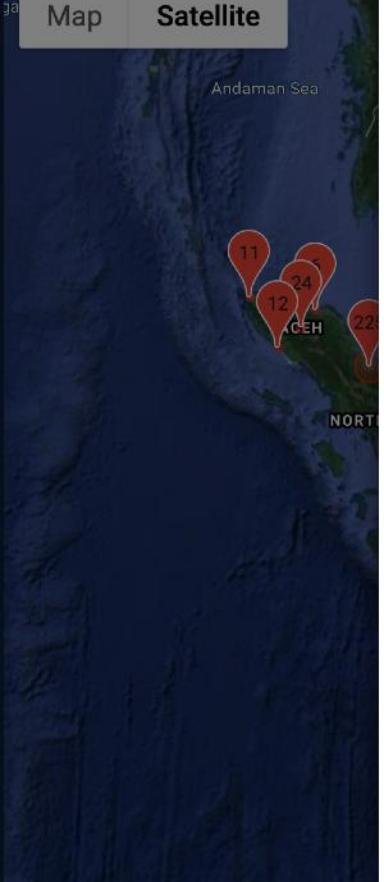
RUU Haluan
Ideologi 412



CONTOH DETAIL BERITA DI "MALUKU UTARA"

Search: demo, unjuk rasa

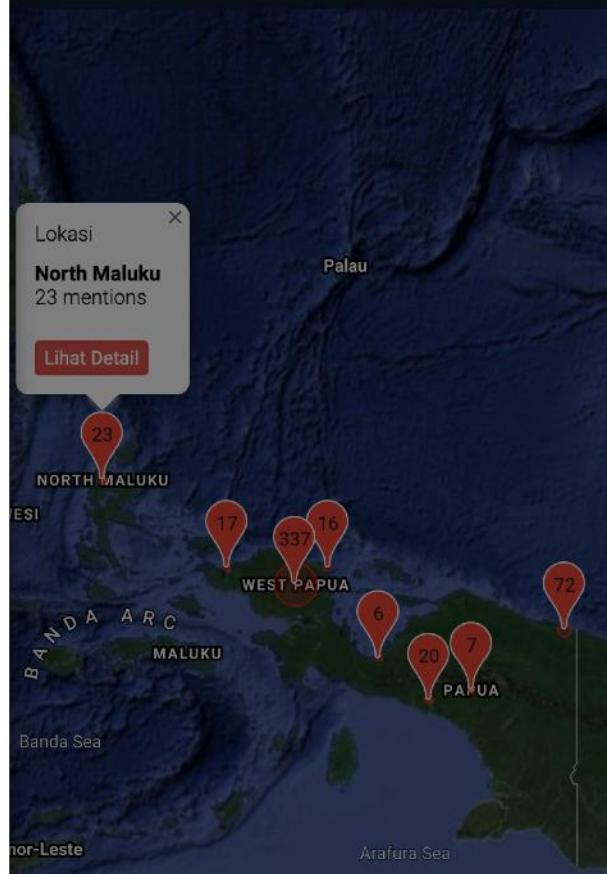
Tampilan: Dashboard SPO M



North Maluku



No	Teks	Tokoh	Organisasi	Lokasi
1	IMAGE Puluhan pedagang Pasar Mardika melakukan unjuk rasa menolak PSBB di Balai Kota Ambon, Maluku, Kamis 2/7 . 02-07-2020 16:39 - www.cnnindonesia.com	Puluhan pedagang Pasar Mardika	IMAGE, PSBB	Balai Kota Ambon, Maluku
2	Berita Ambon -- Persatuan Pergerakan Mahasiswa Islam Indonesia PMII Maluku kembali melakukan aksi unjuk rasa menuntut pimpinan PT.. Pelni Cabang Ambon mengklarifikasi pernyataan di beberapa media yang dianggap merugikan nama organisasi tersebut, Kamis 05/03 . 06-03-2020 08:01 - radiodms.com	Pelni Cabang Ambon	Persatuan Pergerakan Mahasiswa Islam Indonesia, PMII, PT	Berita Ambon, Maluku
3	Warga adat Maluku itu melakukan unjuk rasa terhadap tindakan illegal logging yang dilakukan oleh perusahaan ECI yang mungkin menurut masyarakat adat Maluku, Tina dan Yongky itu sebagai pihak yang tidak berhak atas kayu itu. 08-03-2020 20:13 - nusantaraneWS.co	Warga adat Maluku	ECI, Yongky	Maluku, Tina
4	Unjuk rasa ratusan mahasiswa ke kantor gubernur Maluku guna menyampaikan sejumlah keresahan, kegelisahan dan keprihatinan dari mahasiswa terhadap sejumlah persoalan di Maluku beberapa diantaranya terkait penanganan covid-19 di provinsi Maluku termasuk keterbukaan penggunaan anggaran covid di Maluku.	Unjuk		Maluku



CONTOH DETAIL BERITA DI "PAPUA BARAT"

Search: demo, unjuk rasa

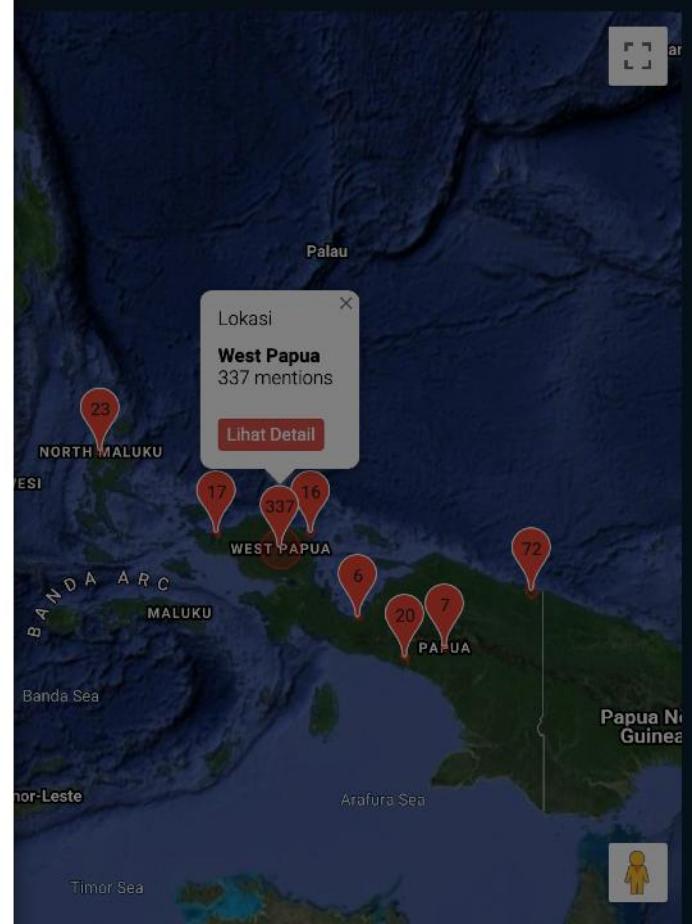
Tampilan: Dashboard SPO Map

Map Satellite

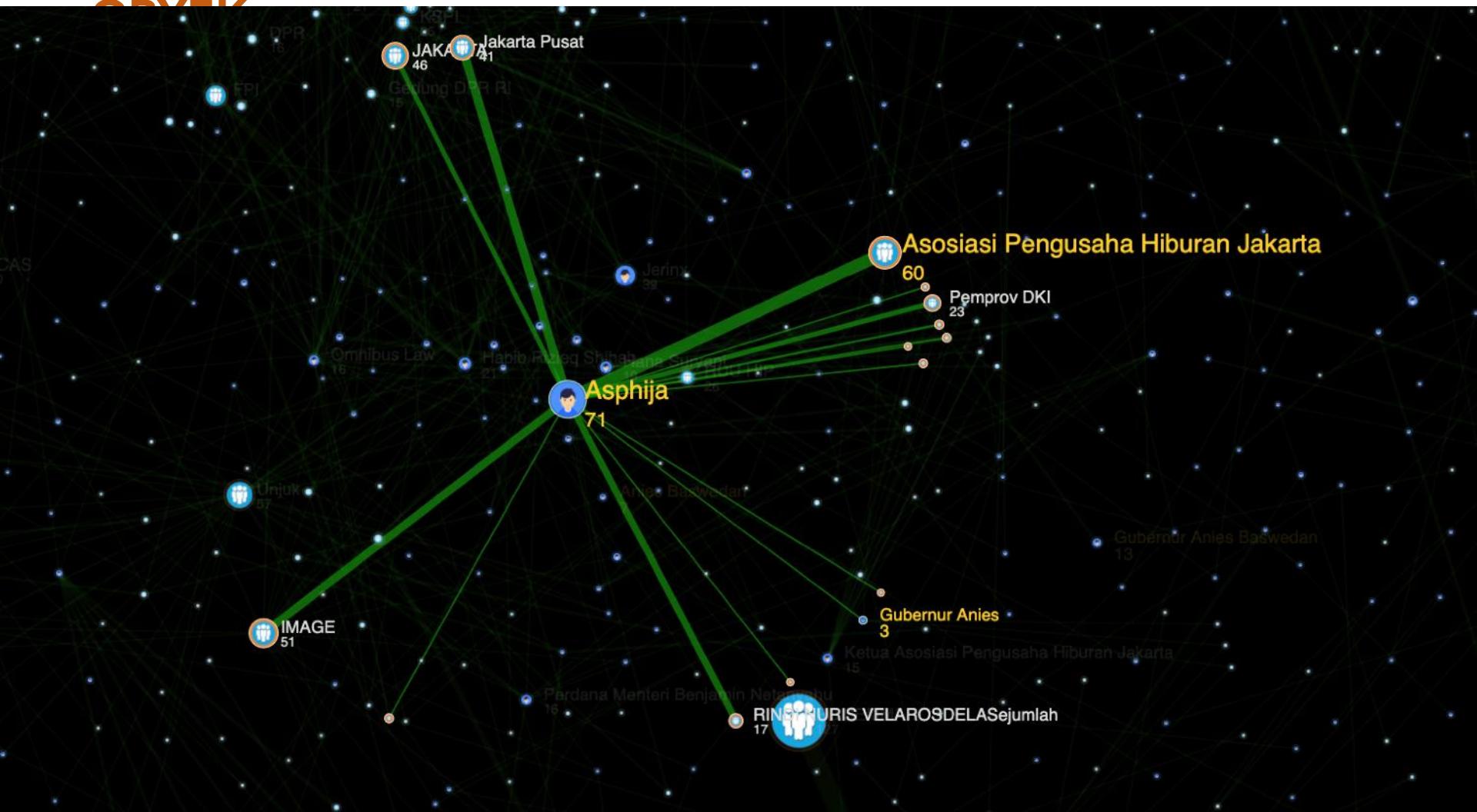


West Papua

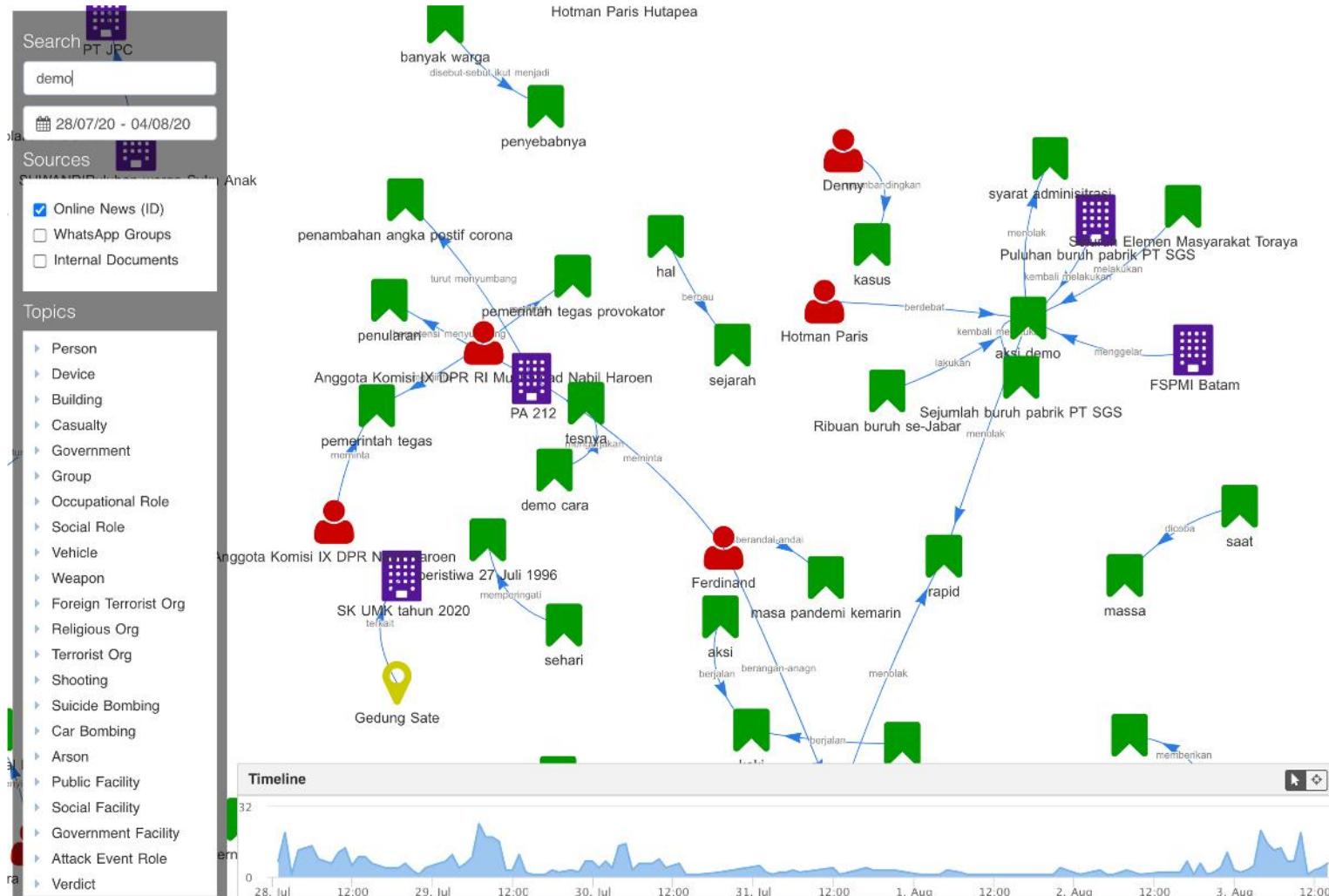
No	Teks	Tokoh	Organisasi	Lokasi
1	Sejumlah aksi unjuk rasa digelar di Papua dan Papua Barat. 27-02-2020 20:17 - www.tribunnews.com			Papua, Papua Barat
2	Sejumlah aksi unjuk rasa digelar di Papua dan Papua Barat. 26-02-2020 19:19 - www.cnnindonesia.com			Papua, Papua Barat
3	atas unjuk rasa menolak rasialisme pada Agustus 2019 di Papua. 18-06-2020 09:06 - www.tribunnews.com			Papua
4	Unjuk rasa dilakukan di berbagai wilayah di Papua dan Papua Barat. 24-01-2020 18:45 - www.cnnindonesia.com	Unjuk		Papua, Papua Barat
5	Unjuk rasa dilakukan di berbagai wilayah di Papua dan Papua Barat. 24-01-2020 20:09 - www.cnnindonesia.com	Unjuk		Papua, Papua Barat
6	Unjuk rasa dilakukan di berbagai wilayah di Papua dan Papua Barat. 30-01-2020 08:25 - www.cnnindonesia.com	Unjuk		Papua, Papua Barat
7	Unjuk rasa kerap dilakukan di berbagai wilayah di Papua dan Papua Barat, memancing banyak k... 30-01-2020 11:29 - www.gelora.co	Unjuk		Papua, Papua Barat
8	Sekadar mengingatkan, pada September 2019 lalu terjadi aksi unjuk rasa di Wamena, Papua yang berujung ricuh. 27-02-2020 21:21 - www.cnnindonesia.com			Wamena, Papua
9	Massa Kabupaten Waropen, Papua melakukan unjuk rasa dan merusak kantor Bupati Waropen.	Bupati Waropen		Massa Kabupaten Waropen,



MELIHAT CO-OCCURRENCE ANTARA SUBYEK-SUBYEK



EKSPLORASI GRAPH DARI RELASI S-P-O

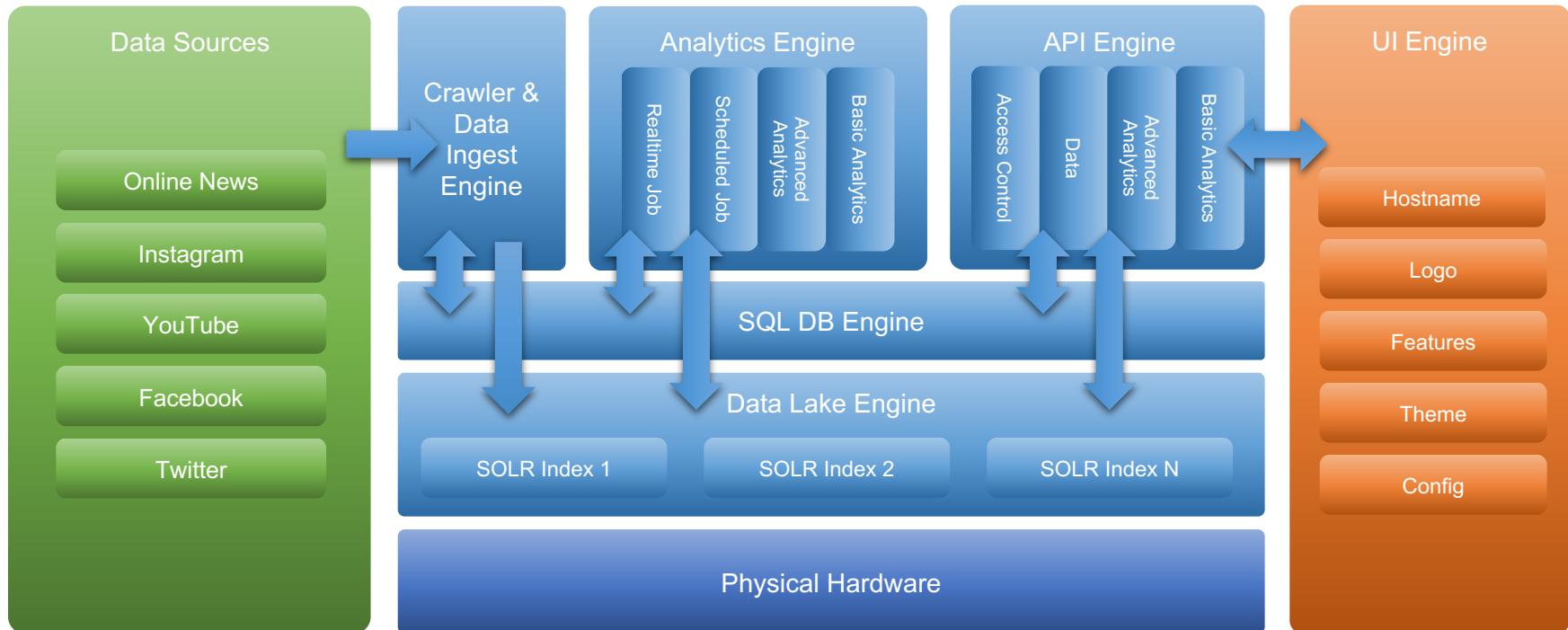


Filters	None
Entity Types	
Organizations	50 +
Persons	50 +
Locations	50 +
Terms	50 +
Organizations	
DPR RI	27
RUU HIP	25
FPI	18
PA 212	13
IMAGE	12
Persons	
Jerinx SID	18
Jerinx	17
Hotman Paris	13
Jerman	11
Habib Rizieq	10
Shihab	10
Locations	
Bali	46
Demo	45
Jakarta	22
Indonesia	13
Berlin	11
Terms	
demo	213
aksi demo	83
Senin	63
Bali	48

DRONE EMPRIT DAN ANALISIS MEDIA SOSIAL

MK ARCHITECTURE

Media Kernels crawls OSINT data from online news, Instagram, YouTube, Facebook, and Twitter. All data will be stored in a data lake engine for further intelligent analytics. The analytics results will be stored in a database for advanced visualization features.

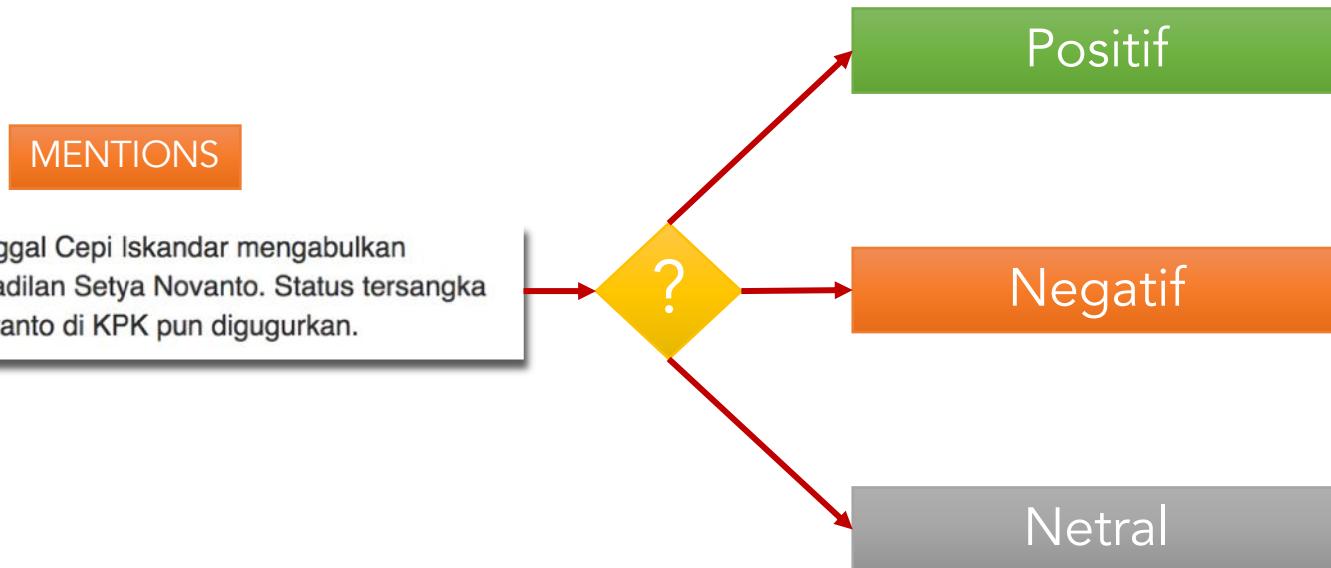


MK FEATURES



SENTIMENT ANALYSIS

SENTIMENT ANALYSIS



SENTIMENT ANALYSIS

MENTIONS

Jakarta - Hakim tunggal Cepi Iskandar mengabulkan permohonan praperadilan Setya Novanto. Status tersangka yang disandang Novanto di KPK pun digugurkan.



Positif



Untuk Setya Novanto

SENTIMENT ANALYSIS

MENTIONS

Jakarta - Hakim tunggal Cepi Iskandar mengabulkan permohonan praperadilan Setya Novanto. Status tersangka yang disandang Novanto di KPK pun digugurkan.



Untuk KPK

SENTIMENT ANALYSIS

MENTIONS

Jakarta - Hakim tunggal Cepi Iskandar mengabulkan permohonan praperadilan Setya Novanto. Status tersangka yang disandang Novanto di KPK pun digugurkan.

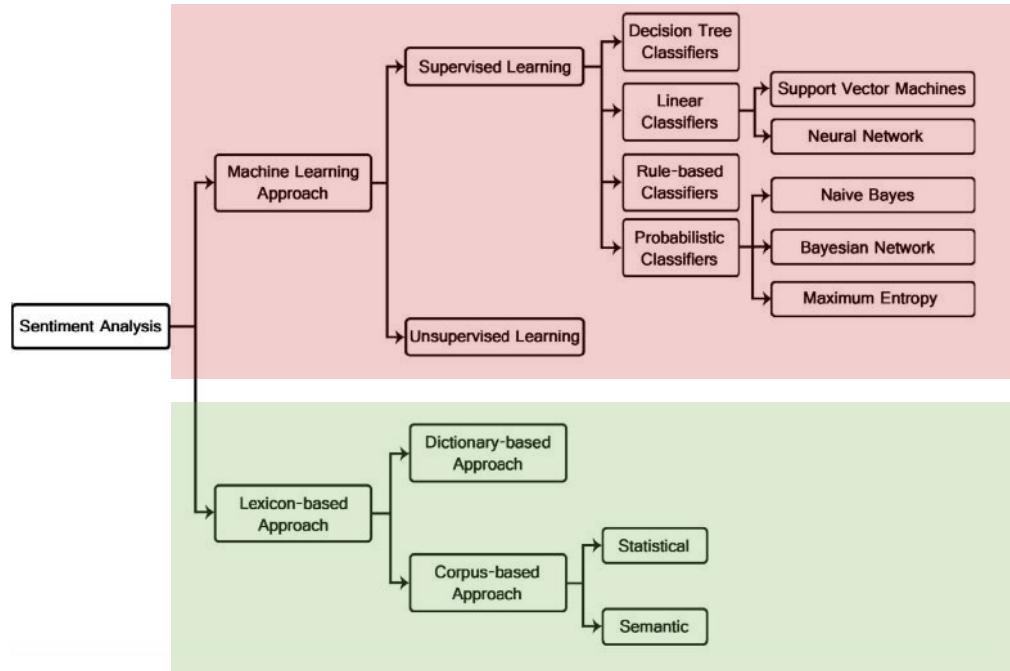


Untuk Hakim Cepi Iskandar

Netral

EVALUASI

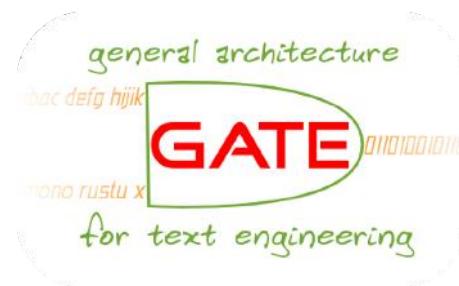
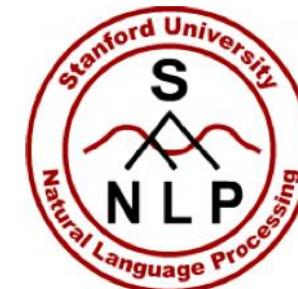
Jakarta - Hakim tunggal Cepi Iskandar mengabulkan permohonan praperadilan Setya Novanto. Status tersangka yang disandang Novanto di KPK pun digugurkan.



"one model for all" tidak bisa memberi label yang tepat untuk setiap subyek.

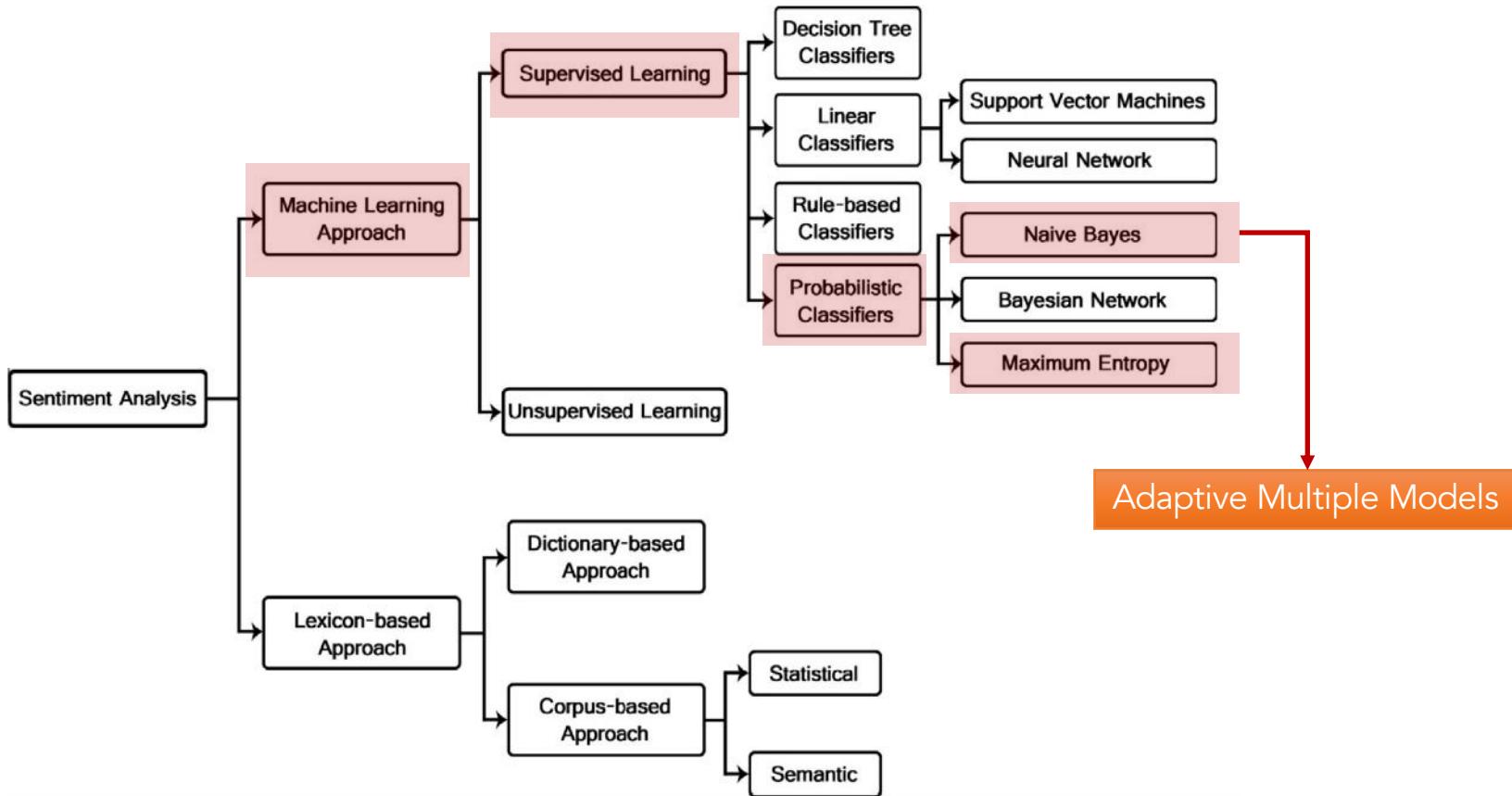
Lexicon base tergantung dari keberadaan kata dalam kamus sentimen, tidak bisa memberi label yang tepat untuk subyek yang berbeda.

SENTIMENT ANALYSIS TOOLS



<https://breakthroughanalysis.com/2012/01/08/what-are-the-most-powerful-open-source-sentiment-analysis-tools/>

SENTIMENT ANALYSIS: DRONE EMPRIT



DEMOGRAPHY ANALYSIS



PUBLISHED

16 MAY 2019

SHARE THIS



RESEARCH

SOCIETY

New machine learning algorithm can predict age and gender from just your Twitter profile

A new “demographic inference” tool developed by academics can make predictions based solely on the information in a person’s social media profile (i.e. screen name, biography, profile photo, and name). The tool—which works in 32 languages—could pave the way for views expressed on social media to be factored in to popular survey methods.

Features



M3 multimodal, multiattribute, multilingual:

@ ismailfahmi

Predict

Ismail Fahmi (@ismailfahmi)

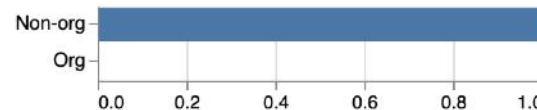
Drone Emprit and Media Kernels Indonesia, Founder

Visualised

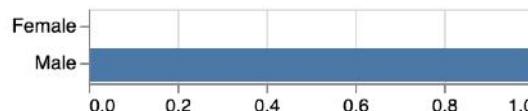
JSON



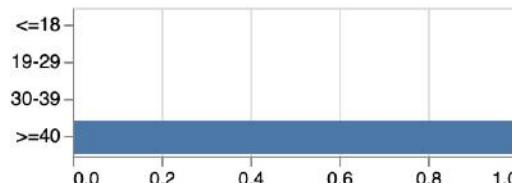
Account: **Non-organization**



Gender: **Male**



Age: **>=40**



GITHUB LIBRARY



<https://github.com/euagendas/m3inference>

zijwang	Update email alias	Latest commit 256903c on Jul 8
m3inference	version update	6 months ago
scripts	init. commit	7 months ago
test	init. commit	7 months ago
.gitignore	init. commit	7 months ago
LICENSE	init. commit	7 months ago
MANIFEST.in	update license to package distributions	7 months ago
README.md	Update email alias	4 months ago
env_conda.yml	init. commit	7 months ago
requirements.txt	init. commit	7 months ago
setup.py	version update	6 months ago

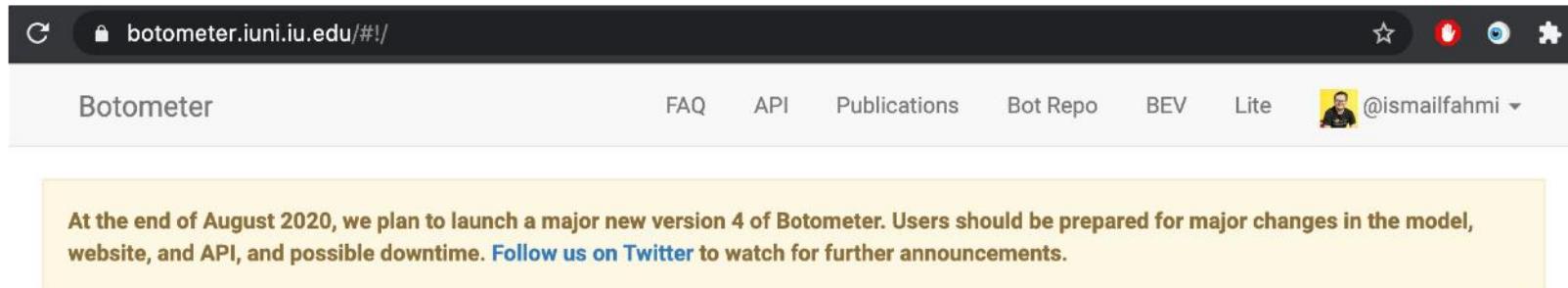
README.md

M3-Inference

This is a PyTorch implementation of the M3 (Multimodal, Multilingual, and Multi-attribute) system described in the WebConf (WWW) 2019 paper [Demographic Inference and Representative Population Estimates from Multilingual Social Media Data](#).

BOT ANALYSIS

Botometer adalah tools yang dibuat Indiana University untuk mengecek aktivitas sebuah akun di Twitter dan memberi score seberapa besar probabilitas akun itu merupakan bot. Semakin besar scorenya, semakin tinggi kemungkinan itu bot.



The screenshot shows the Botometer website at botometer.iuni.iu.edu/#/. The header includes links for Botometer, FAQ, API, Publications, Bot Repo, BEV, Lite, and a user profile for @ismailfahmi. A message in a yellow box states: "At the end of August 2020, we plan to launch a major new version 4 of Botometer. Users should be prepared for major changes in the model, website, and API, and possible downtime. [Follow us on Twitter](#) to watch for further announcements."

Botometer[®]

An OSoMe project (bot•o•meter)



Botometer (formerly BotOrNot) checks the activity of a Twitter account and gives it a score based on how likely the account is to be a bot. Higher scores are more bot-like.

Use of this service requires Twitter authentication and permissions. ([Why?](#))

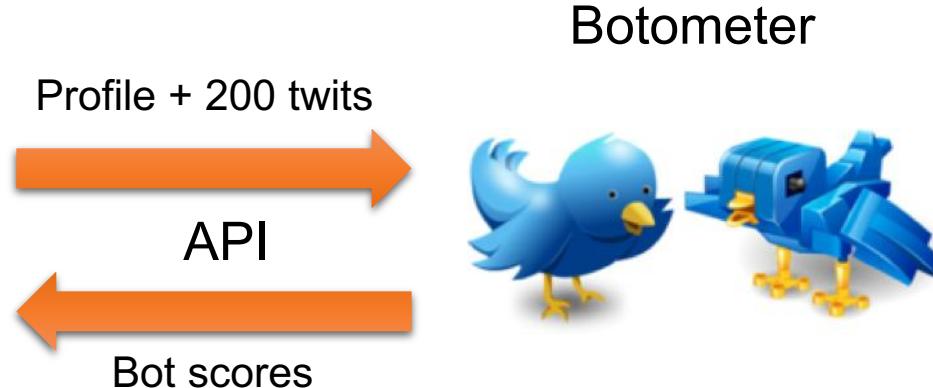
If something's not working or you have questions, please contact us only after reading the [FAQ](#).

Botometer is a joint project of the Network Science Institute ([IUNI](#)) and the Center for Complex Networks and Systems Research ([CNetS](#)) at Indiana University.

DRONE EMPRIT + BOTOMETER



Untuk menentukan score bot dari akun-akun yang muncul dalam percakapan, Drone Emprit menggunakan layanan Botometer API. Setiap akun diambil profilnya, plus 200 cuitan terakhir, lalu dikirim ke server API Botometer. Response dari API adalah score bot dari akun tersebut. Ini dilakukan untuk setiap akun, sehingga butuh waktu lama untuk menyelesaikan identifikasi bot dari semua akun.



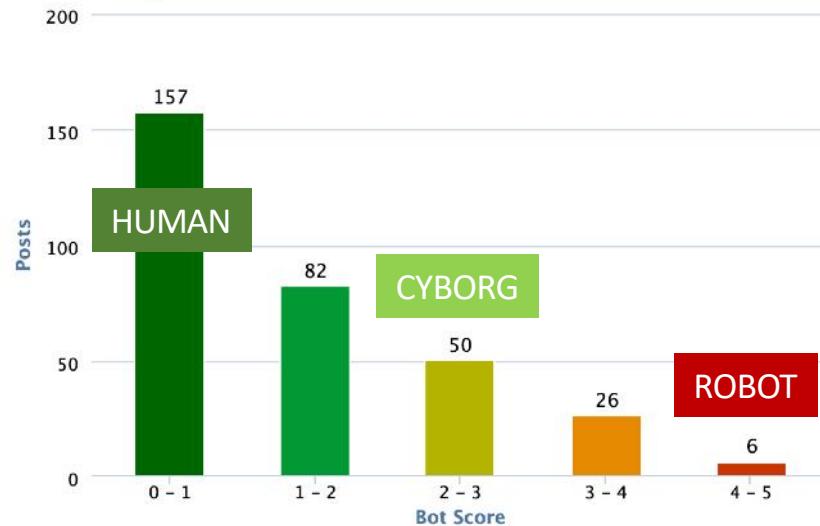
<https://rapidapi.com/OSoMe/api/botometer>

HOW IT WORKS

- Botometer is a machine learning algorithm trained to classify an account as bot or human based on tens of thousands of labeled examples.
- When you check an account, you fetches its public profile and hundreds of its public tweets and mentions using the Twitter API.
- This data is passed to the Botometer API, which extracts about 1,200 features to characterize the account's profile, friends, social network structure, temporal activity patterns, language, and sentiment.
- Finally, the features are used by various machine learning models to compute the bot scores.

VISUALISASI HASIL BOT ANALYSIS

Total Posts By Bot Score



Overall Post Bot Score



Statistics by Bot Score

Bot Score	Percentage	Authors	Posts	Retweeted	Mentions	Replies
0 - 1	51 %	142	157	107	28	22
1 - 2	25 %	70	82	54	10	18
2 - 3	15 %	42	50	37	9	4
3 - 4	6 %	16	26	5	12	9
4 - 5	2 %	6	6	1	5	0

Author Statistics

Active authors

400

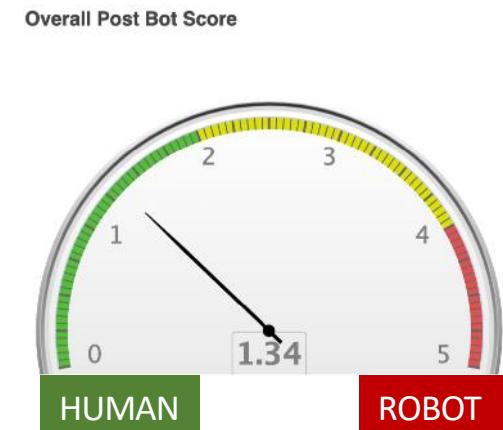
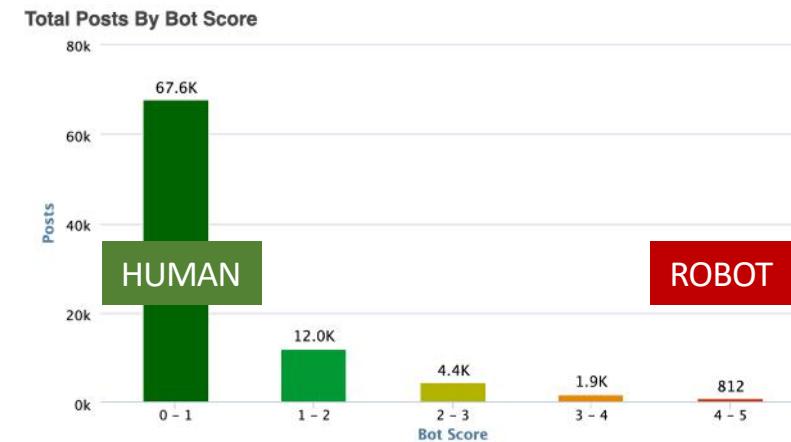
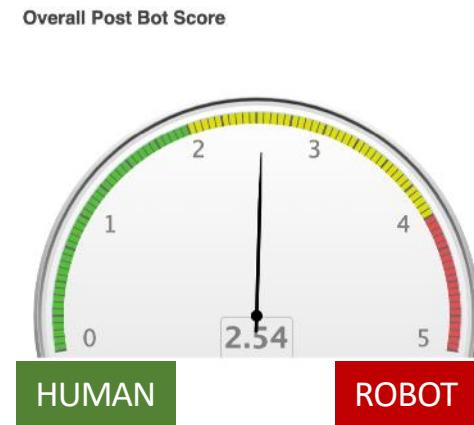
Identified Authors

276

Identified Authors (%)

69.00 %

AI UNTUK MENDETEKSI ROBOT DI TWITTER



PETA PERCAKAPAN "JEJAK KHILAFAH"

SOCIAL NETWORK ANALYSIS: MENTION AND RETWEET NETWORK.

Date: Aug 13, 2020 - Aug 25, 2020

Total mentions and retweets:

Jejak Khilafah: 136357

Bot scores:

0-1 : 41%

1-2 : 24%

2-3 : 18%

3-4 : 11%

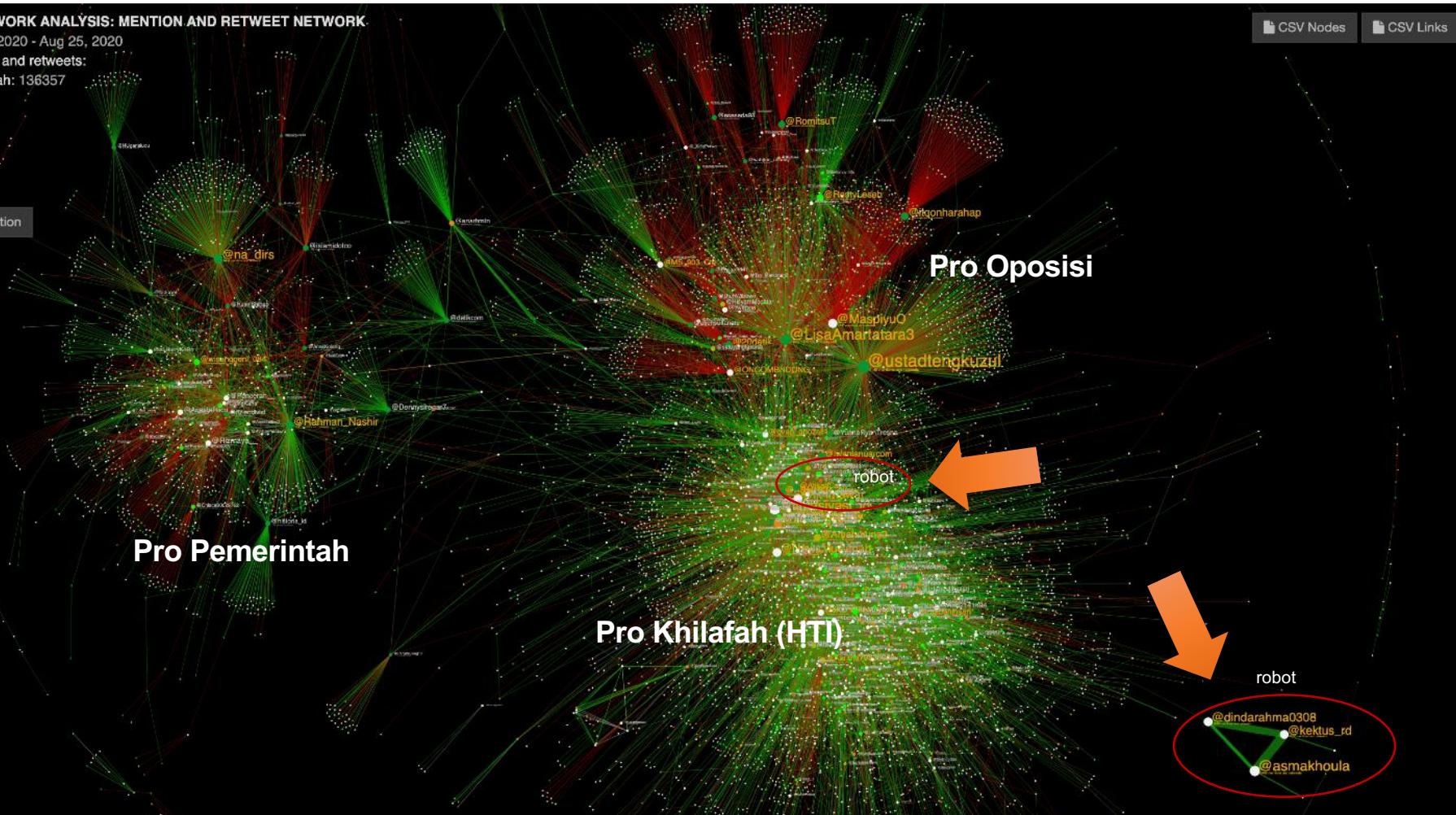
4-5 : 6%

► Start animation

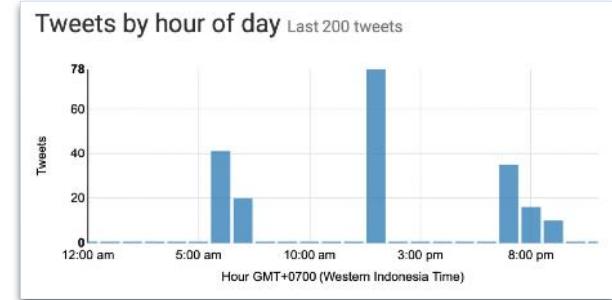
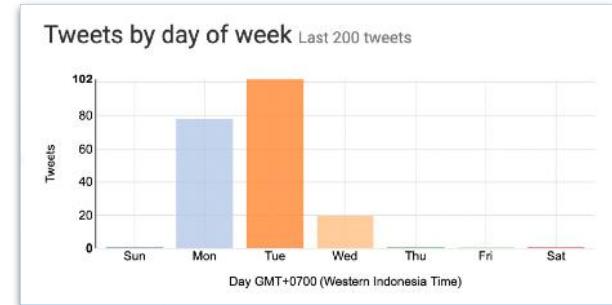
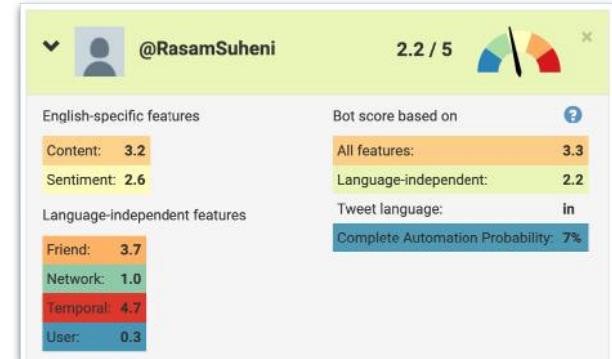
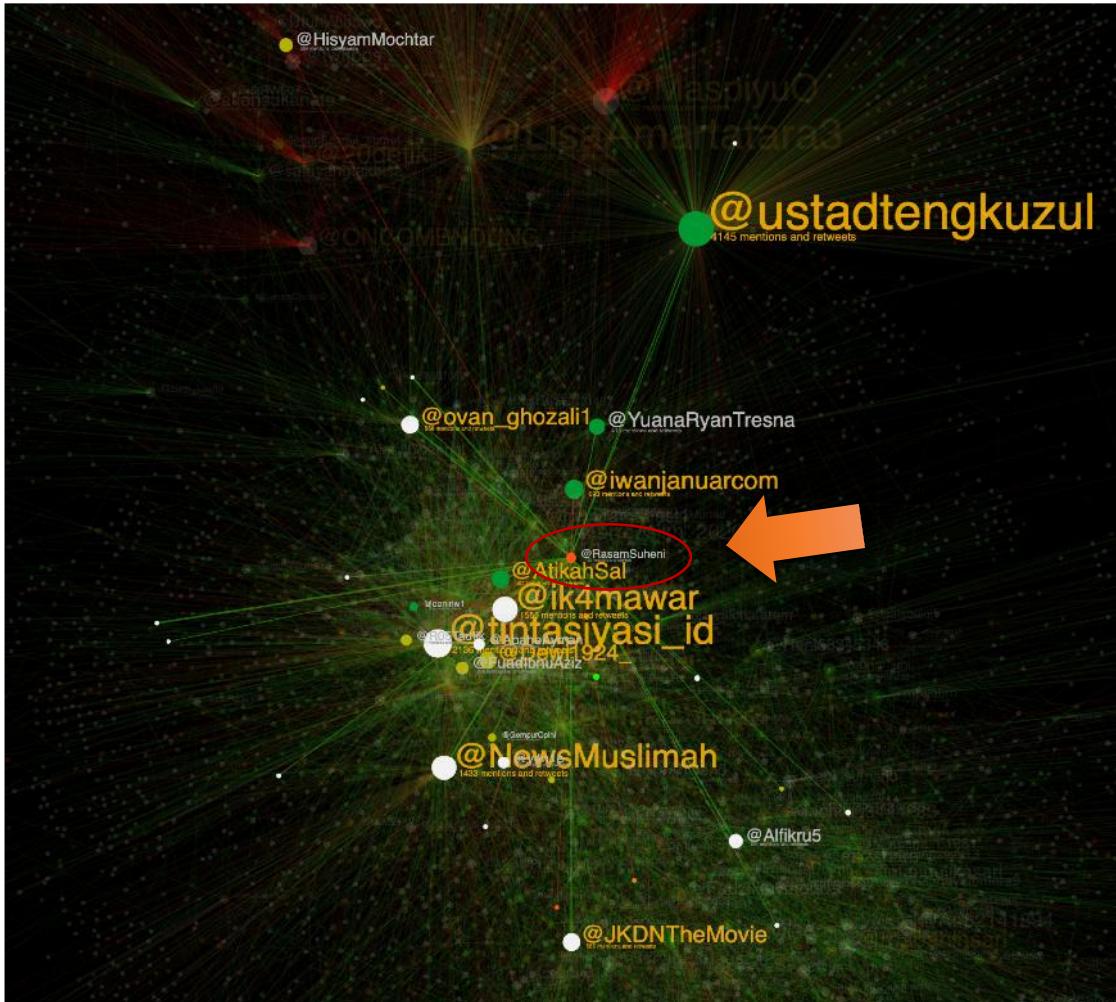
Font :

+

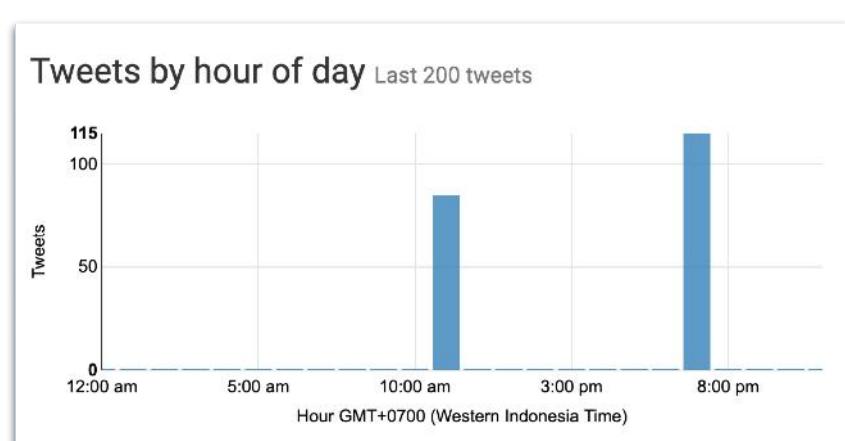
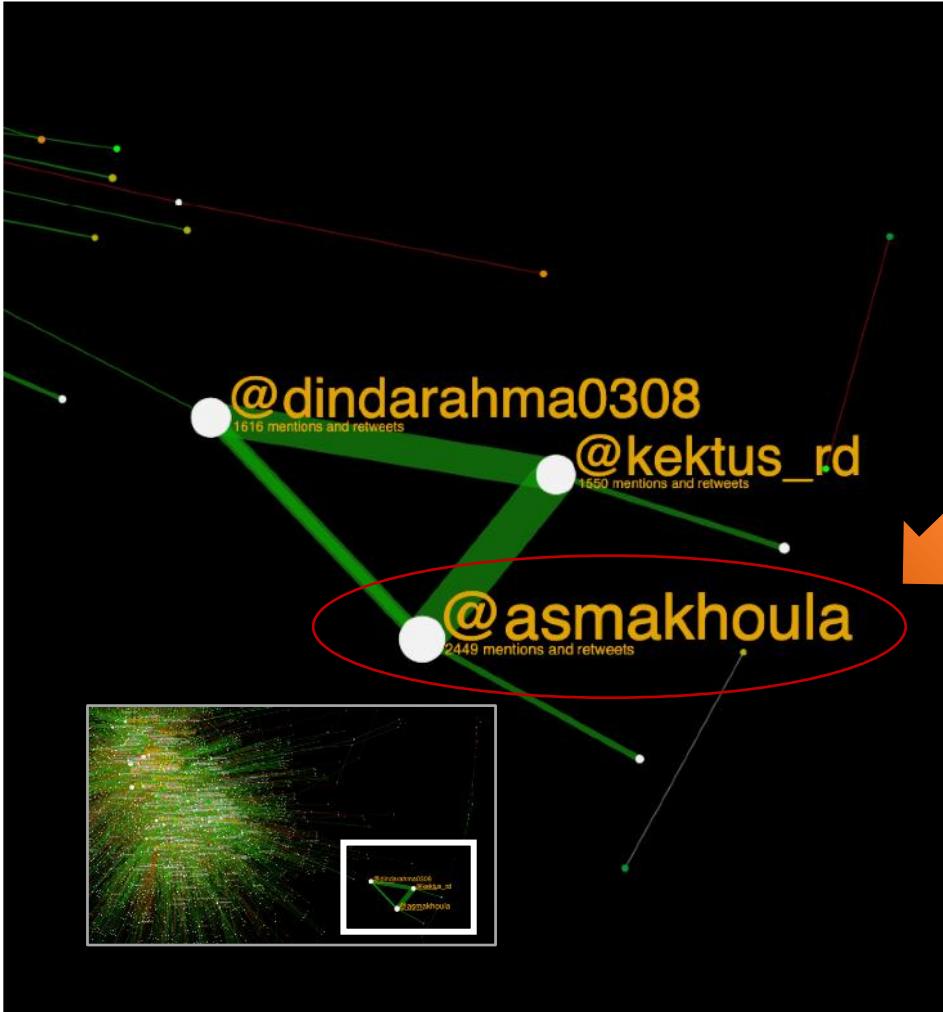
-



CONTOH AKUN ROBOT



AKSI ROBOT-ROBOT DI TWITTER

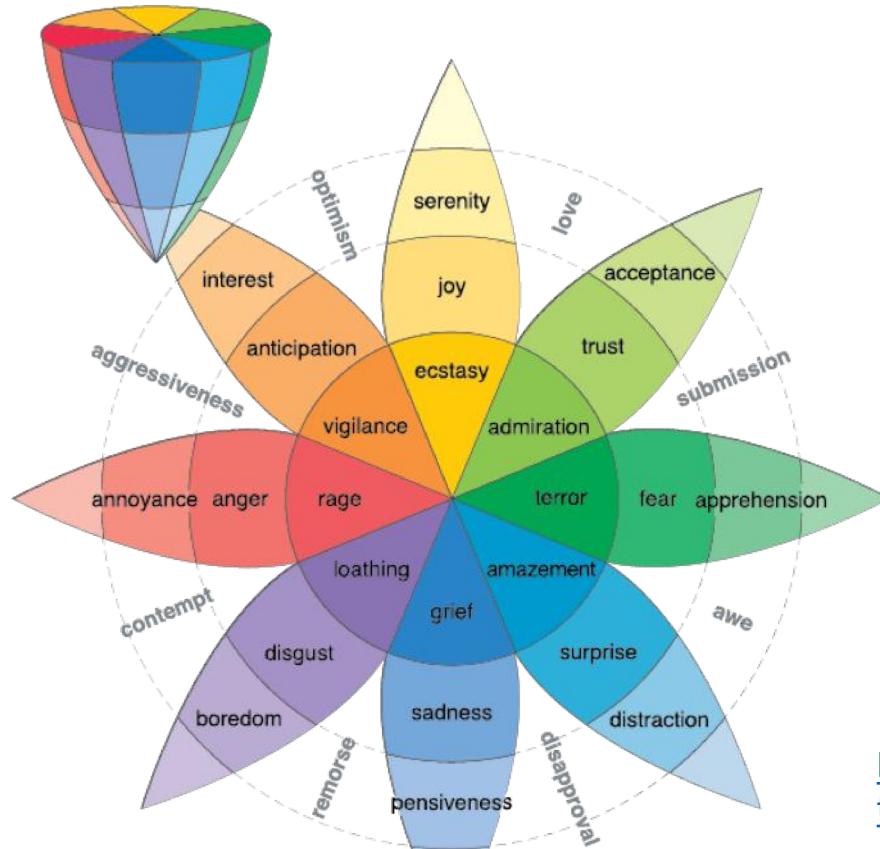


REGEX: EMOTION ANALYSIS

MENGGALI LEBIH DALAM EMOSI PUBLIK DALAM PERCAKAPAN

- Secara kolosal, dari semua perakapan, kita bisa melihat tren emosi publik terhadap sebuah isu tertentu.
- Dengan analisis emosi ini, kita bisa tahu:
 - Apakah publik cenderung: percaya, tidak percaya, takut, senang, sedih, marah, jijik, terkejut, atau penuh harapan?
 - Apa yang membuat publik merasa percaya, takut, atau marah?
 - Bagaimana tren emosi tertentu, dihubungkan dengan peristiwa yang tengah terjadi?
- Untuk mengetahui emosi publik kita bisa menggunakan:

PLUTCHIK'S WHEEL OF EMOTIONS



<https://www.6seconds.org/2017/04/27/plutchiks-model-of-emotions/>

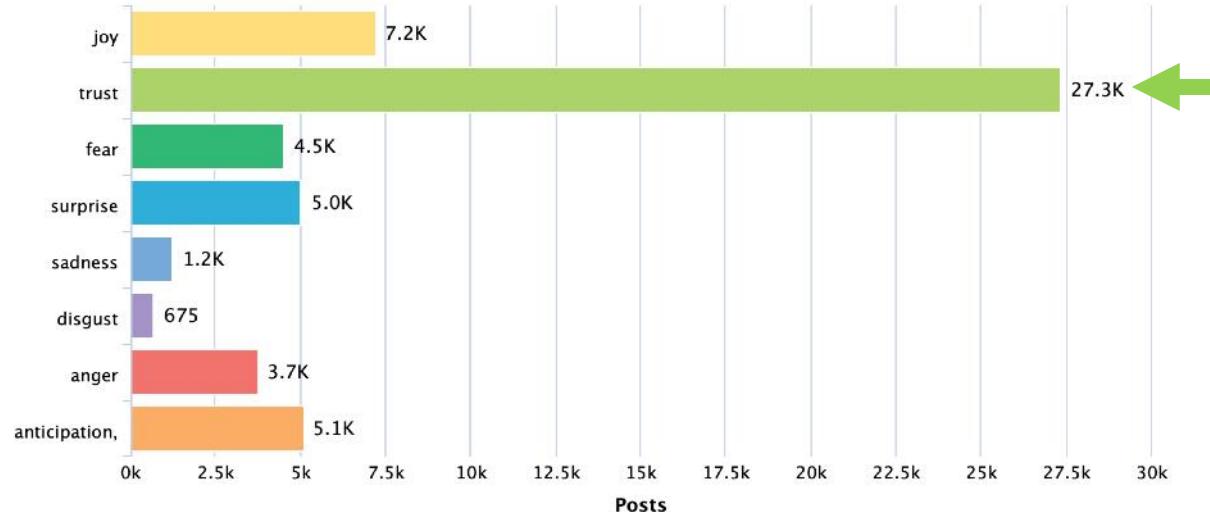
Reprinted on www.6seconds.org by permission of American
Scientist, magazine of Sigma Xi, The Scientific Research Society.

LEXICON BASED ANALYSIS

- JOY
 - senang, bahagia, suka, seneng, hepi, menyenangkan, happy, menggembirakan, gembira, fun, sukacita, riang, ceria, ...
- TRUST
- FEAR
- SURPRISE
- SADNESS
- DISGUST
- ANGER
- ANTICIPATION

EMOSI: TIDAK YAKIN DENGAN KESIAPAN SARANA & LAYANAN KESEHATAN, KURVA BELUM TURUN

Emotions Analysis



Tidak yakin, karena:

- Kasus korona masih tinggi (misal Surabaya).
- Negara lain mulai saat kurva melandai, Indonesia masih naik.
- Potensi gelombang ke-2 corona.
- Jumlah test masih kecil.
- Seperti perang tanpa senjata.



Podoradong (twitter)
Twitter: @podoradong
⌚ 27/May/2020 11:17 WIB
2,252 retweets 6,519 likes

Kondisi kota surabaya sudah parah dalam penanganan virus corona, Pemkot sudah tidak mampu mengendalikan dan kemampuan rumah sakit cисurabaya sudah tidak mampu karena minimnya alkes yang ada Mau new normal?

Kasus korona masih tinggi



Ligwina Hananto (twitter)
Twitter: @mrshananto
⌚ 27/May/2020 08:11 WIB
3,213 retweets 5,235 likes

Main2 dg kata new normal ini seperti kebijakan resmi ya? Negara lain buka lagi ekonomi saat kurva melandai. Kita mau buka ekonomi saat kasus positif menuju 1.000 per hari. Okesip. Gw baru mau main mall ki Pak Jokowi udah bisa bawa cucu ke mall.

Kurva masih naik



stevanie Huang (centang pink) (twitter)
Twitter: @Stevaniehuangg
⌚ 28/May/2020 20:40 WIB
935 retweets 2,504 likes

Baru Kermanin Koar2 New Normal Sekarang Ingatkan Potensi Wabah Corona Gelombang 2 😕 Jadi Skrg Kita Masih Tetap New Normal Ga Nih ??? Masih Mau Ngajak "damai" Si Kopiit ??? Atau Mau Ajak "dansa" ??? So ????????

<https://t.co/YXqcDouzG>
Potensi gelombang kedua



Elisa (twitter)
Twitter: @elisa_jkt
⌚ 29/May/2020 07:22 WIB
328 retweets 465 likes

Kota Bekasi di Provinsi Jawa Barat yg total test PCR nya masih per 29 Mei 2020 cuma baru capai 15.363 test. Kayak gini ud mau #NewNormal? Sbg perbandingan, total test PCR DKI sdh 138.476, alias hampir 10x Pemprov Jabar. Bekasi punya aj2 apa sih sampai berani siap2 #NewNormal?

Test masih kecil



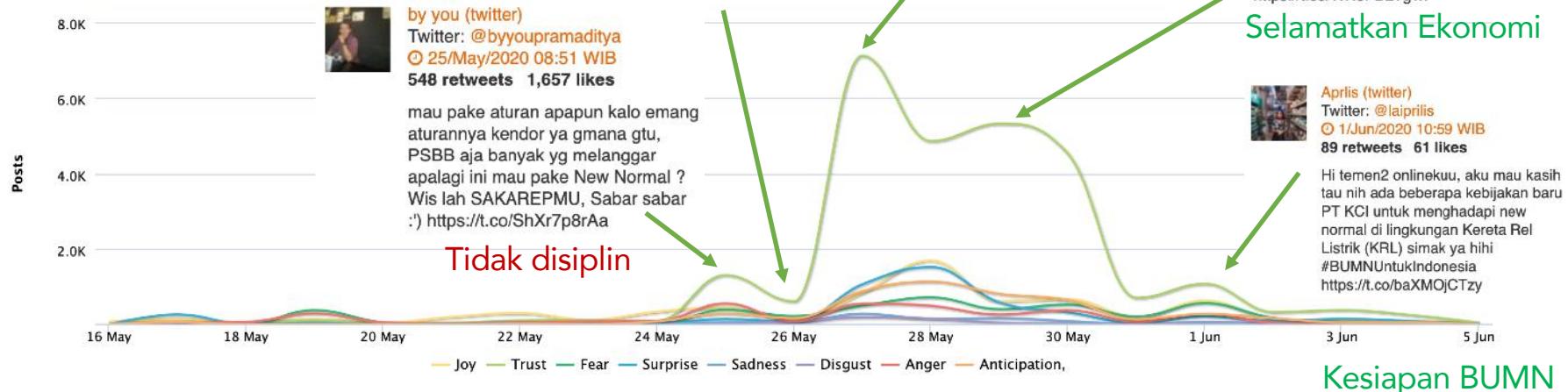
ing (twitter)
Twitter: @pandaimelamun
⌚ 30/May/2020 16:06 WIB
7,092 retweets 18,294 likes

Disuruh perang. Tapi gatau lawannya siapa. Ga punya senjata apa-apa. New normal life, katanya? Yakin bukan pembunuhan masal?
<https://t.co/t5dUtX8F9Y>

Perang tanpa senjata

TREN EMOSI

The trends of posts by emotion



TOPIK PENELITIAN

SOME TOPICS

- Question Answering System
- Extracting Terms from Text
- Extracting Term Variation
- Extracting Synonyms
- Extracting Abbreviations
- Learning and Extracting Relations
- Identifying Definitional Sentences Using Machine Learning
- Hoax Detection
- Sentiment Analysis
- Emotion Analysis
- Named Entity Recognition
- Etc

MY DISSERTATION



University of Groningen



University Medical Center Groningen

Automatic term and relation extraction for medical question answering system

Fahmi, Ismail

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:
2009

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):
Fahmi, I. (2009). *Automatic term and relation extraction for medical question answering system*. s.n.



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groningen



Center for Language and Cognition Groningen

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Groningen Dissertations in Linguistics 72
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Printed by Grafimedia, Groningen
Document prepared with Kile, L^AT_EX 2_< and typeset in pdfT_EX.

DRONE EMPRIT DALAM ARTIKEL ILMIAH

WORKSHOP BIG DATA/DEA DENGAN PERGURUAN TINGGI



**STRATEGI RISET DIGITAL:
DINAMIKA EKSTREMISME
KEKERASAN DI MEDIA
SOSIAL**

Ismail Fahmi, Ph.D.
Director Media Kernels Indonesia (Drone Emprit)
Lecturer at the University of Islam Indonesia
ismail.fahmi@gmail.com

BINCANG DAMAI PSKP UGM
7 MEI 2021

**BIG DATA FOR
COMMUNICATION
STRATEGIC**

Ismail Fahmi, Ph.D.
Director Media Kernels Indonesia (Drone Emprit)
Lecturer at the University of Islam Indonesia
ismail.fahmi@gmail.com

WEBINAR UAD
10 APRIL 2021

**ANALITIKA MEDIA
SOSIAL DAN DIGITAL**

Ismail Fahmi, Ph.D.
Director Media Kernels Indonesia (Drone Emprit)
Lecturer at the University of Islam Indonesia
ismail.fahmi@gmail.com

KULIAH TAMU
3 MARET 2021

**SOCIAL NETWORK
ANALYSIS**
KONSEP, CONTOH, DAN
IMPLEMENTASI

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Director Media Kernels Indonesia (Drone Emprit)
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KULIAH TAMU UNIV. GUNADARMA
26 APRIL 2021

**ANALISIS BIG DATA
MEDIA SOSIAL**
MENGGUNAKAN DRONE EMPRIT
ACADEMIC

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TRAINING DRONE EMPRIT
25 FEBRUARI 2021

TEXT MINING
DEFINISI, PROSES, TOOLS, TOPIK
RISET, DAN IMPLEMENTASI

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WORKSHOP SNA 2020
12 NOVEMBER 2020

INSIDE DRONE EMPRIT
DARI "MOONLIGHTING" HINGGA
ANALITIK DAN TEKNOLOGI DI
BALIKNYA

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Perkembangan teknologi berbasis artificial intelligent (machine learning) saat ini telah dimanfaatkan oleh beberapa bidang keilmuan. **Drone Emprit** salah satunya yang telah memanfaatkannya dengan membuat platform online yang berbasis teknologi big data ...

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Mobile phones are devices that always embedded in the society of Indonesian people, around 91% of Indonesians population use mobile phones and around 60% are smartphones. The most widely used smartphone application is social media, around 60% of ...

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WS Adji, A Bashith, A Nashith, S Amin - Abjadia, 2019 - repository.uin-malang.ac.id

Social problems in Indonesia in particular are caused by social phenomena transmitted to users of social media, especially Twitter. Big data system provided by **Drone Emprit** Academic is able to find social phenomena. The ability of critical literacy to read and write ...

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R Watrianthos - 2020 - osf.io

Awal tahun 2020, Jakarta dan daerah sekitarnya mendapatkan kado awal tahun yang tidak menyenangkan dengan terjadinya banjir bandang di beberapa tempat. Hujan deras yang mengguyur Jakarta dimalam tahun baru memicu banjir yang merendam pemukiman, jalan ...

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Outline Abstract Keywords 1. Introduction 2. Literature review 3. Methods: big data analysis and applying a civic engagement framework 4. Results and discussion: awareness, actors, and civic engagement 5. Conclusion Funding Declaration of competing interests Acknowledgment References Show full outline ▾

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International Journal of Disaster Risk Reduction
Volume 60, 15 June 2021, 102271.

Overlooking the victims: Civic engagement on Twitter during Indonesia's 2019 fire and haze disaster

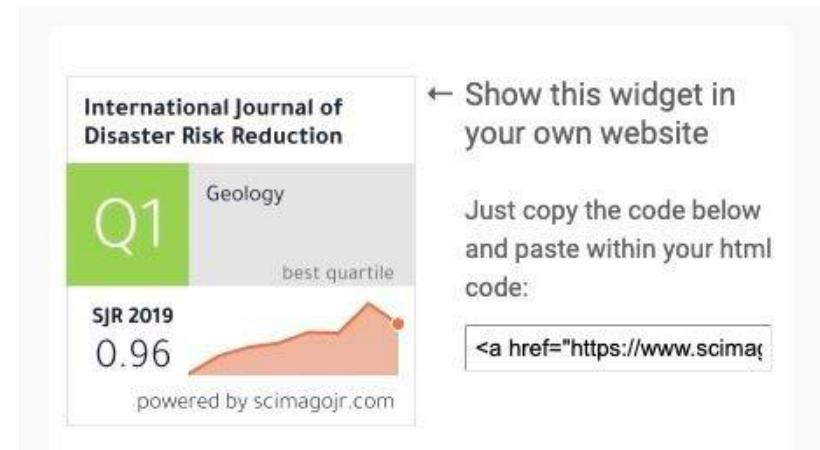
Nurul Hadi^a, B. Oli, Michael R. Fisher^{b,c}, Muhammadiqbal A.K. Suhide^{c,d}

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Abstract

Social media serves as a powerful communication medium, in which researchers and practitioners continue to explore its relevance for understanding disasters. Twitter has received attention for its ability to communicate quickly across space, in support of disaster response, directing resources, and supporting victims. It also highlights what society prioritizes in a disaster. Our research examines the role that Twitter plays during a disaster, with attention on civic engagement among netizens. Indonesia's reoccurring fires are a result of significant land use change taking place across lowland, carbon-rich peatlands in Sumatra and Kalimantan, creating a thick haze that can travel long distances impacting human health, the economy, and greenhouse gas emissions. Foregrounded by critical data studies, we apply a civic engagement framework and conduct big data mapping using Drone Emprit Academic Open Data software by keywrding 'forest fires' [kebakaran hutan], aggregating 316,782 tweets unfolding during the height of the fires on 8–21 September 2019. Results show the highly politicized dynamics of this disaster during a period of contentious political campaigning intent on assigning blame or defending actions. In addition, the geography of Twitter users and the rural site of disaster served to amplify politics at scale, while drowning out the needs of direct victims. Thus, although Twitter may have a major role to play in disaster management, it is important to situate its role in the context of the disaster, foregrounding the geographic and political dimensions around the key questions about who is affected and how.



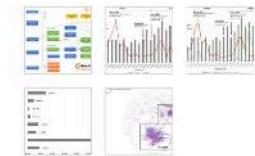
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1. Introduction
2. Methods
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4. Discussion
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Computer Methods and Programs in Biomedicine

Volume 205, June 2021, 106083



Social Media Data Analytics for Outbreak Risk Communication: Public Attention on the "New Normal" During the COVID-19 Pandemic in Indonesia

Anissa Rivya Rahmani^{a, b, c, d}, Dira Nur Anggraini Ningrum^{a, b, c}, Lutfan Lazuardi^c, Huan-Chia Yang^{a, b, c, d}, Yu-Chuan(Jack) Li^{a, b, c, d, f, g, h, i, j, k}, ...
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<https://doi.org/10.1016/j.cmpb.2021.106083>

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Abstract

Background

After two months of implementing a partial lockdown, the Indonesian government had announced the "New Normal" policy to prevent a further economic crash in the country. This policy received many critics, as Indonesia still experiencing a fluctuated number of infected cases. Understanding public perception through effective risk communication can assist the government in relaying an appropriate message to improve people's compliance and to avoid further disease spread.

Objective

This study observed how risk communication using social media platforms like Twitter could be adopted to measure public attention on COVID-19 related issues "New Normal".

Method

From May 21 to June 18, 2020, we archived all tweets related to COVID-19 containing keywords: "#NewNormal", and "New Normal" using **Drone Emprit Academy (DEA)** engine. DEA search API collected all requested tweets and described the cumulative tweets for trend analysis, word segmentation, and word frequency. We further analyzed the public perception using sentiment analysis and identified the predominant tweets using emotion analysis.

Result

We collected 284,216 tweets from 137,057 active users. From the trend analysis, we observed three stages of the changing trend of the public's attention on the "New Normal". Results from the sentiment analysis indicate that more than half of the population (52%) had a "positive" sentiment towards the "New Normal" issues while only 41% of them had a "negative" perception. Our study also demonstrated the public's sentiment trend has gradually shifted from "negative" to "positive" due to the influence of both the government actions and the spread of the disease. A more detailed analysis of the emotion analysis showed that the majority of the public emotions (77.6%) relied on the emotion of "trust", "anticipation", and "joy". Meanwhile, people were also surprised (8.62%) that the Indonesian government progressed to the "New Normal" concept despite a fluctuating number of cases.

Conclusion

Our findings offer an opportunity for the government to use Twitter in the process of quick decision-making and policy evaluation during uncertain times in response to the COVID-19 pandemic.

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Fahmi, I. (2018). Drone Emprit Academic: Software for social media monitoring and analytics. Available at <http://dea.uii.ac.id>.

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Ismail Fahmi, PhD.



THANK YOU