Teargas, Water Cannons and Twitter: A case study on detecting protest repression events in Turkey 2013

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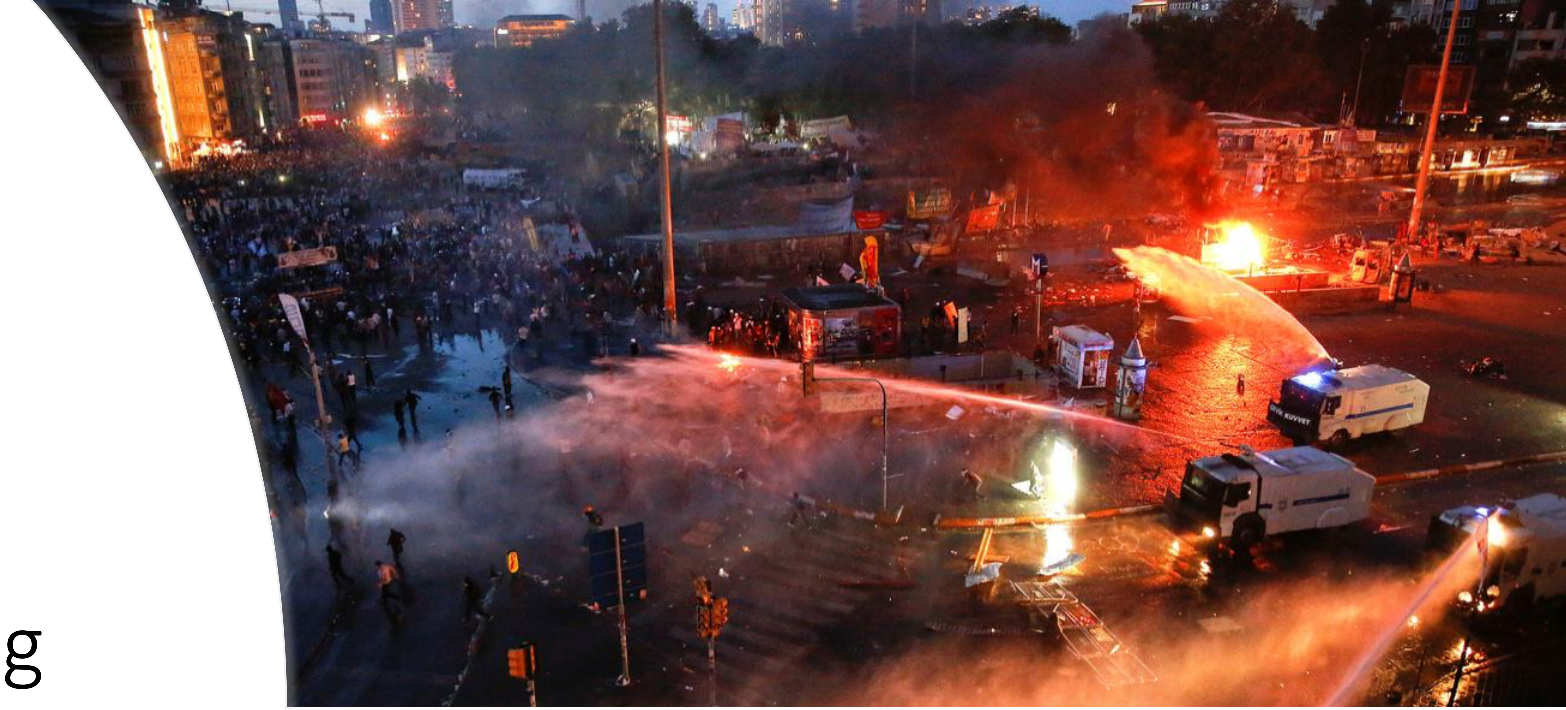


Protest Repression

- “Any action by another group which raises the contender’s cost of collective action” [Til78].
- We are interested in observable, coercive actions carried out by state agents against protesters.
  - Observable: seen by the public.
  - Coercive: include physical violence.
  - State agents: police.

Motivation & Research Proposal

The available datasets have problems with:

Collected from News articles: coverage and accuracy bias [DB02, ESM03].

Hand labelling the data is time and labour consuming.

- Research proposal:
  - Collect events from social media as an alternative to News articles.
  - Automatic detection of protest repression events using ML to save time and labour.

Contribution

- Investigating Twitter as a data source for detecting protest repression (within the scope of our case study).
- Investigating crowdsourcing as a fast and cheap way to build a training dataset for the ML model (within the scope of our case study).

Case Study

Gezi Park Protest 2013

From 31/05/2013 to 30/06/2013.

Case Study

- The tweets were collected by SMPP using hashtags related to the protest.
- They collected 1,290,451 tweets in English.
- To use this dataset in training the ML model, we hire crowd workers to label the tweets.

Crowdsourcing Design

- Figure-Eight
- Hired 3 workers.
- Task limited to only workers from Turkey and with medium-level of experience.
- 116 test questions to eliminate spammers.
- 6693 tweets were labelled.

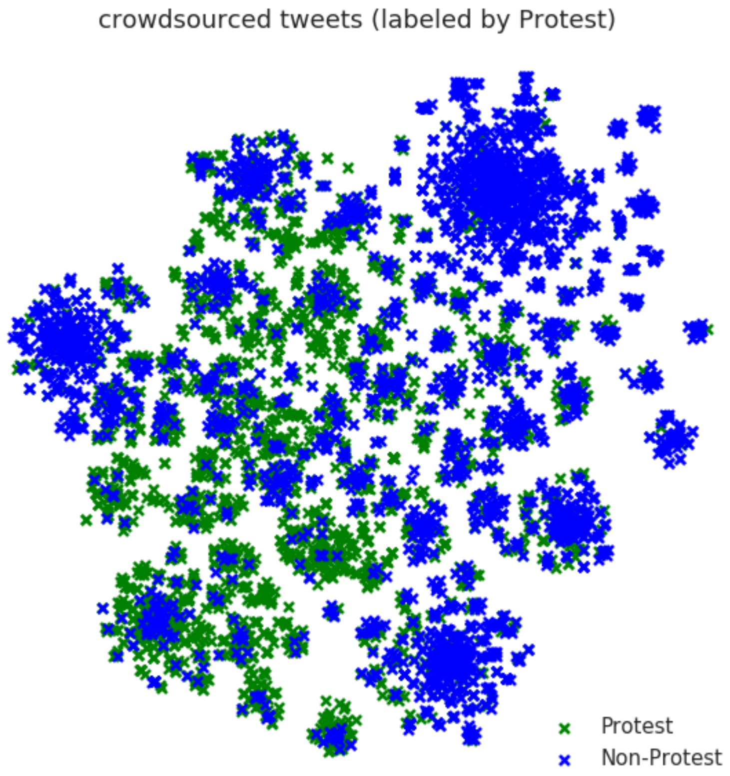
Questions

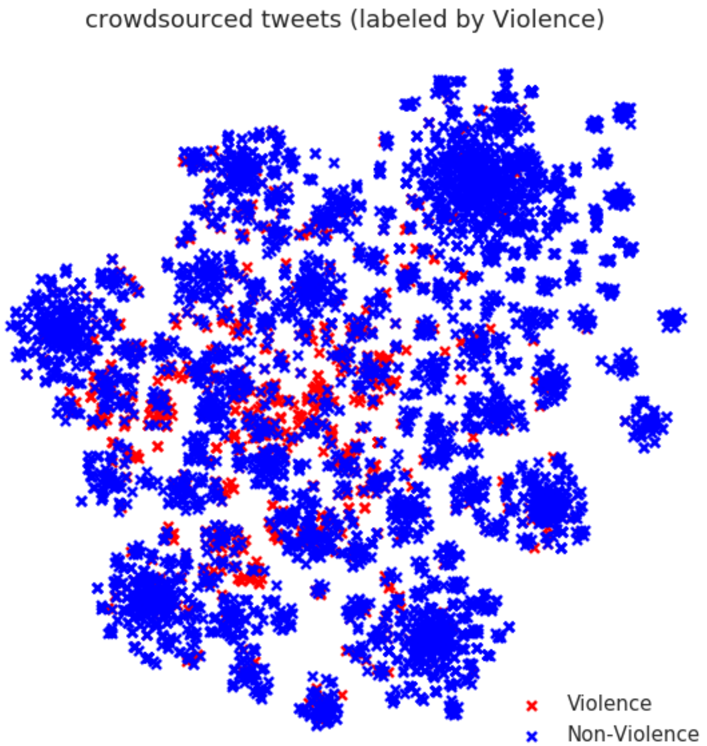
1. Is this tweet related to the Turkish Gezi park protest 2013?
2. Does this tweet report/discuss violent incident?

Crowdsourcing Results

"RT @[redacted]:152.000 new owers, 30 new trees were planted to #GeziPark #Taksim after it was cleaned of the #protestors"

Crowdsourcing Full-agreed Results





Dataset	Size	Positive	Negative
Protest	3860	39%	61%
Violence	5247	6%	94%

ML experiment

Design

- **Preprocessing:**
  - Remove user mentions, http links, hashtags, duplicated tweets.
  - Protest DS : 3666 tweets / 49% positive / 51% negative.
  - Violence DS : 4975 tweets / 6% positive / 94% negative.
- **Feature:**
  - Word count, TF-IDF, W2V.
- **Machine Learning Models:**
  - SVM and MNB.

ML experiment
Results

- **Protest Classification:**

Feature	linear SVM ($C = 1$)	MNB ($\alpha = 2$)
WC	0.895	**0.856**
TF-IDF	**0.896**	0.846
WE	0.872	-

- **Violence Classification:**

Feature	linear SVM ($C = 10$)	MNB ($\alpha = 0.1$)
Count	0.8018	0.816
TF-IDF	**0.8127**	**0.8189**
WE	0.7689	-

Results

- Models applied to the remaining 1,283,758 unlabelled tweets in our dataset.
- 67% of the protest related tweets don’t report violence but 33% do report violence (protest repression incidents)

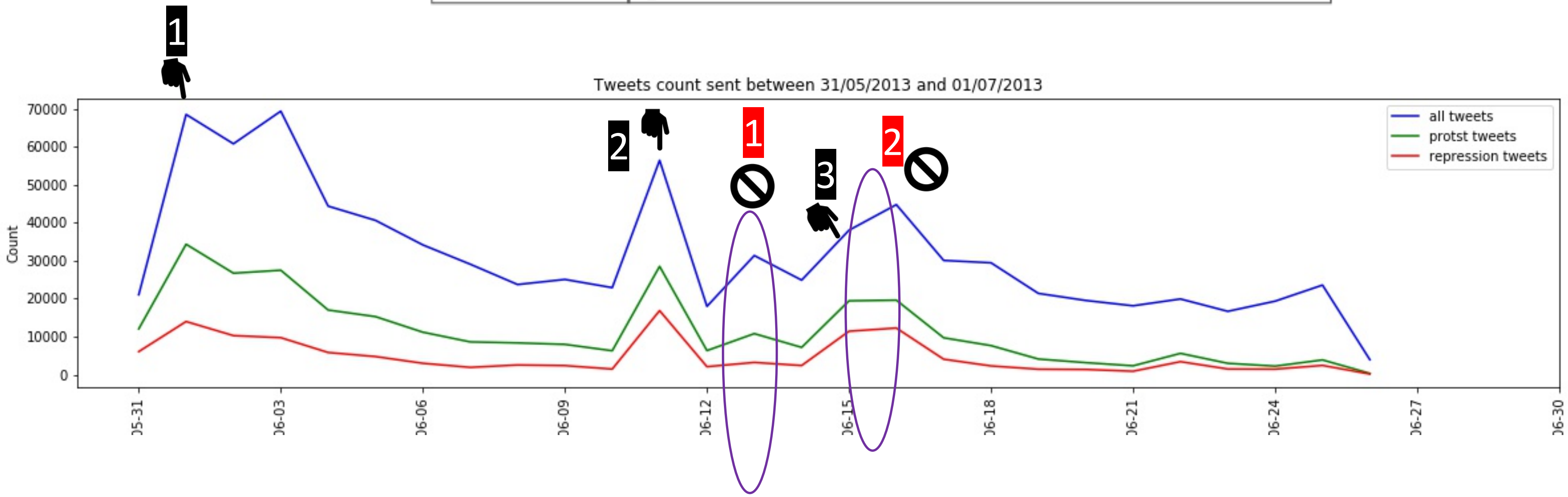
Model	Protest classification	
	Positive	negative
SVM + TF-IDF	36%	64%

Model	Violence classification	
	Positive	negative
MNB + TF-IDF	15%	85%

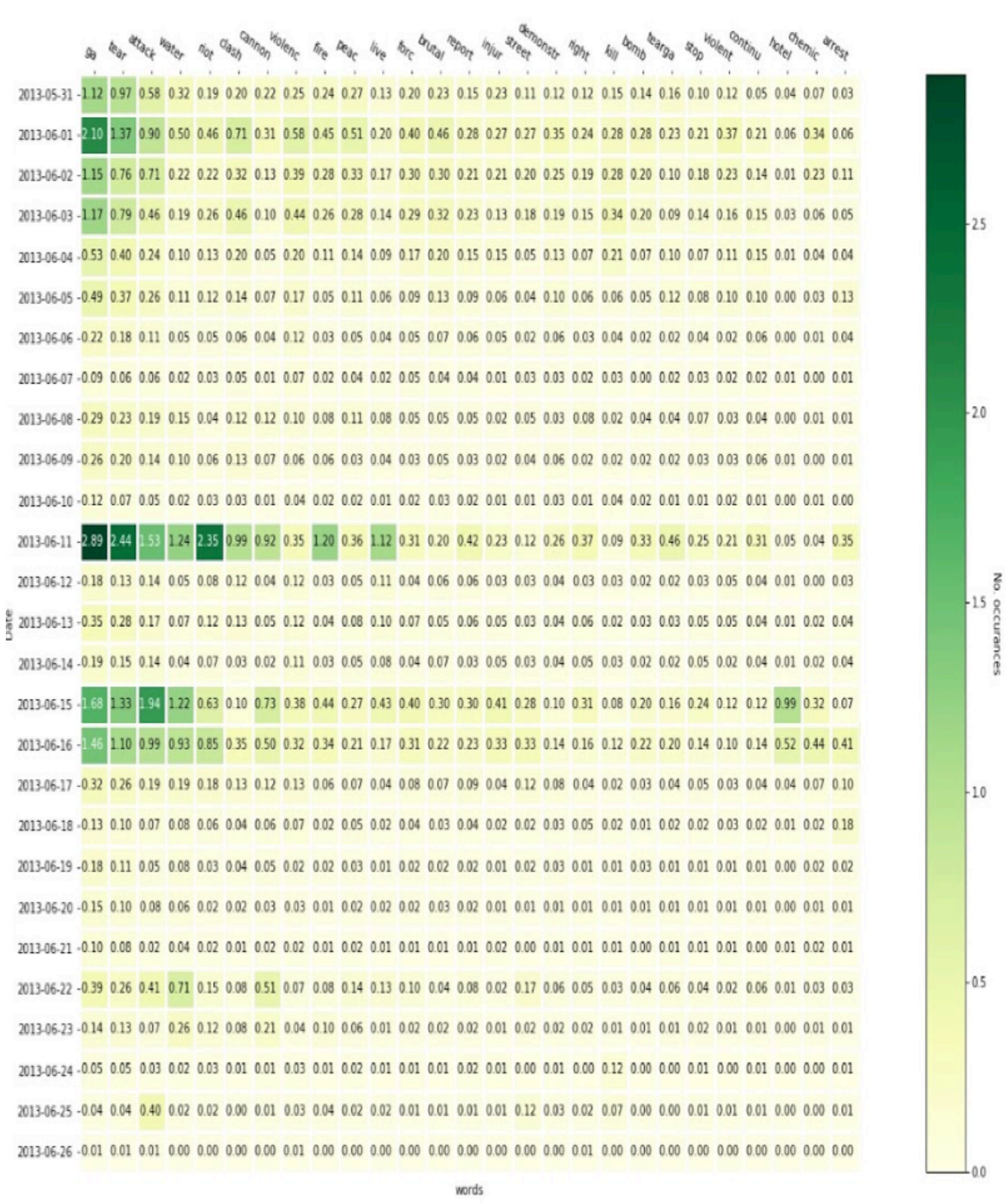
Data Analysis

Tweets Timeline

Date	Event
31/05/2013	The beginning of the protest and the use of force by police including tear gas and water cannons against protesters.
11/06/2013	Police forces make an attempt to clear Gezi square by force.
15/06/2013	The square is successfully cleared from protesters.



Data Analysis Tweets Timeline



Gas
Tear
Attack
Water
Riot
Clash
Cannon
Violence
Force
Brutal
Report
Injury

Limitations & Future work

Limitations

- Ground Truth.
- The small dataset.
- The subjectivity of repression/violence.

Future work

- BERT
- Combine image with text classification for better detection.

Thanks For Listening!

Questions??

References

- [Til78] Charles Tilly. Collective violence in European perspective. 1978.
- [Ear03] Jennifer Earl. Tanks, tear gas, and taxes: Toward a theory of movement repression. Sociological theory, 21(1):44{68, 2003.
- [OBBC13] Isabel Ortiz, Sara L Burke, Mohamed Berrada, and Hernan Cortes. World Protests 2006-2013.2013.
- [DB02] Christian Davenport and Patrick Ball. Views to a kill: Exploring the implications of source selection in the case of Guatemalan state terror, 1977-1995. Journal of conict resolution, 46(3):427{450, 2002}.
- ESM03] Jennifer Earl, Sarah A Soule, and John D McCarthy. Protest under re? Explaining the policing of protest. American sociological review, pages 581{606, 2003}.