



NeurIPS 2020

Tackling Climate Change
with Machine Learning workshop

Narratives and Needs:

Analyzing Experiences of Cyclone Amphan
using Twitter Discourse

Meet the **authors**



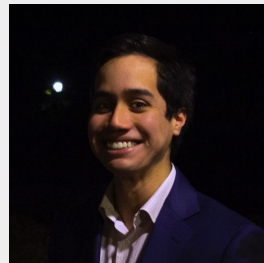
Ancil Crayton



João Fonseca



Michelle Ng



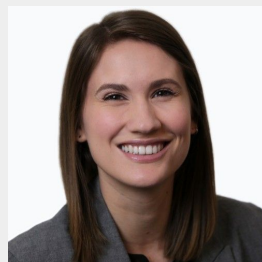
**Marcelo
Sandoval-Castañeda**



Jared Ross



Kanav Mehra



Rachel von Gnechten

Meet our **partner**

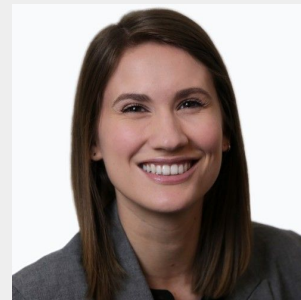


And meet our project's **champions**:



Michelle Ng

Digital Innovations Analyst



Rachel von Gnechten

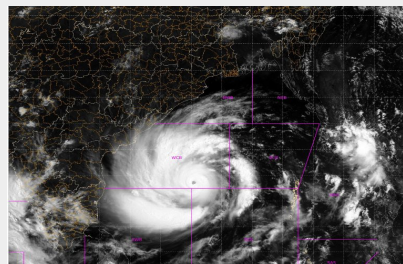
Research Analyst

Amphan **timeline**

May 18

IMD issues warning

Around 7 lakh people evacuated in Bengal and Odisha



May 20

Landfall

Moving with a speed of 220 km/h
First super cyclone since 1999



May 21

Damage / Impact

106 lives lost. \$13.2 billion in damage.
300K hectares of agricultural land impacted.



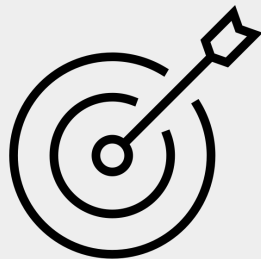
May 22

Relief Measures

41 NDRF teams deployed. Centre announces relief package worth \$200 million.



What are we doing?



Identify and better understand the
experience and needs of **vulnerable societies**
affected by **natural disasters** using social
media data

What **questions** are we looking to **address**?

Following every natural disaster, there are stories - some are *known* and some *unknown*!

Identifying unmet needs



Finding **actionable** or **needs-based** information



Affected people
Requesting help
Offering help

Comparing narratives



What were the different narratives?



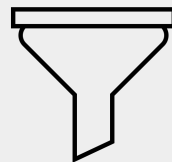
Who shaped the **dominant** narrative?

Who was **marginalized**?

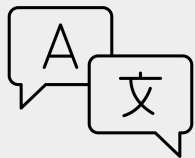
What data are we using?



~ 470k Tweets



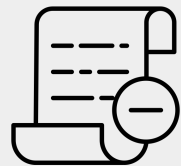
Filter out reserved tokens + hashtags



Text translation



Multi-language query



Stopwords removal



Load data

How are we analysing it?



Exploratory analysis

Feature extraction

POV extraction

Topic modelling

Sentiment analysis

Zero-shot classification

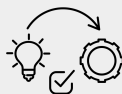
Embed tweets and users

Data analysis

Network analysis

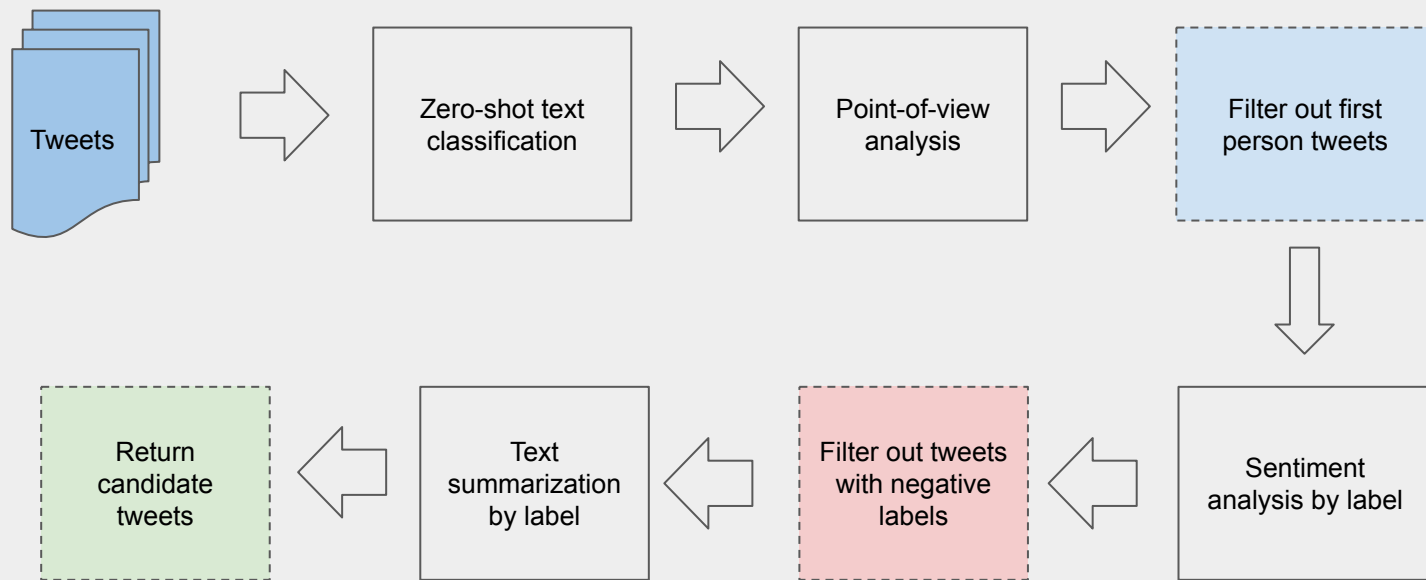
Clustering analysis

Construct pipelines



Handover + **reporting**

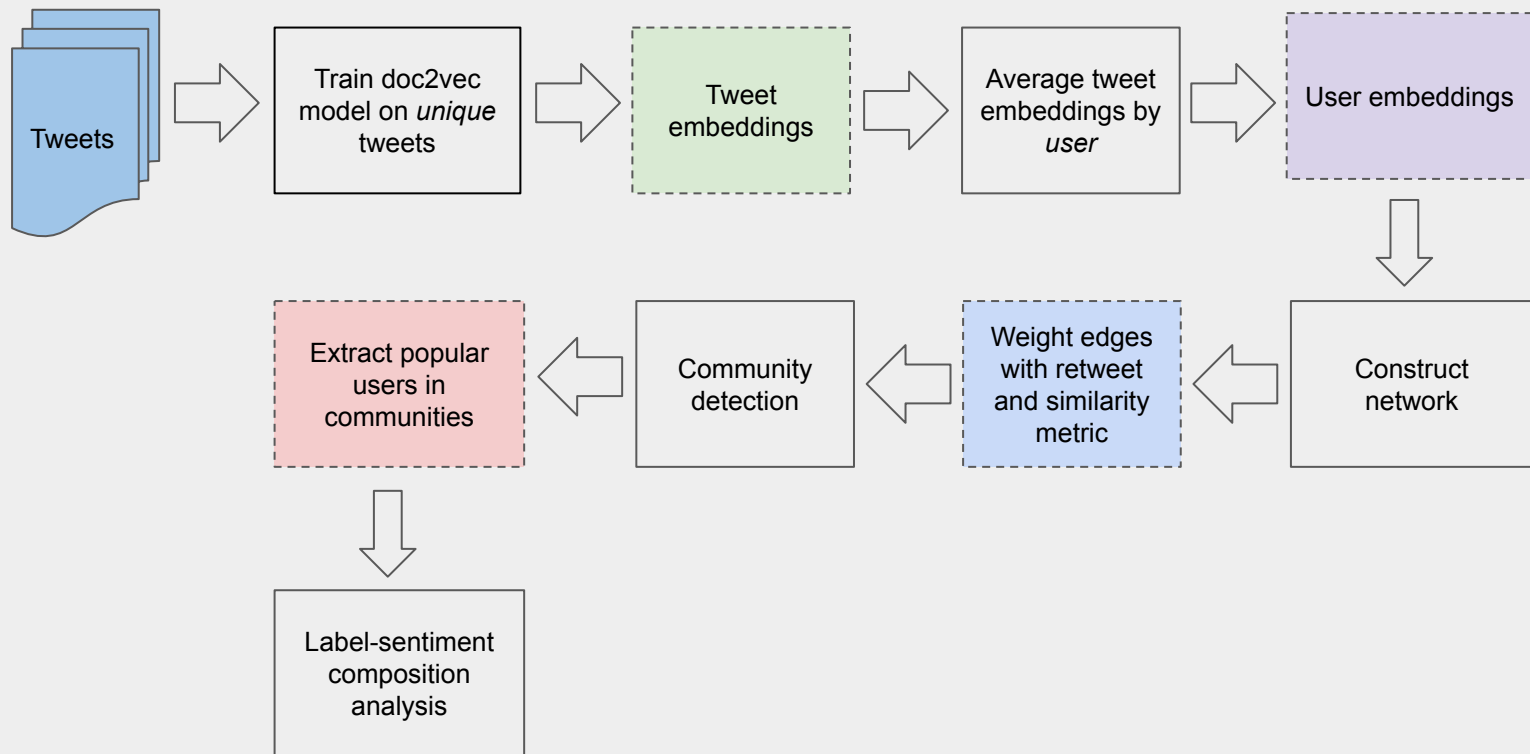
Approach to identifying unmet needs



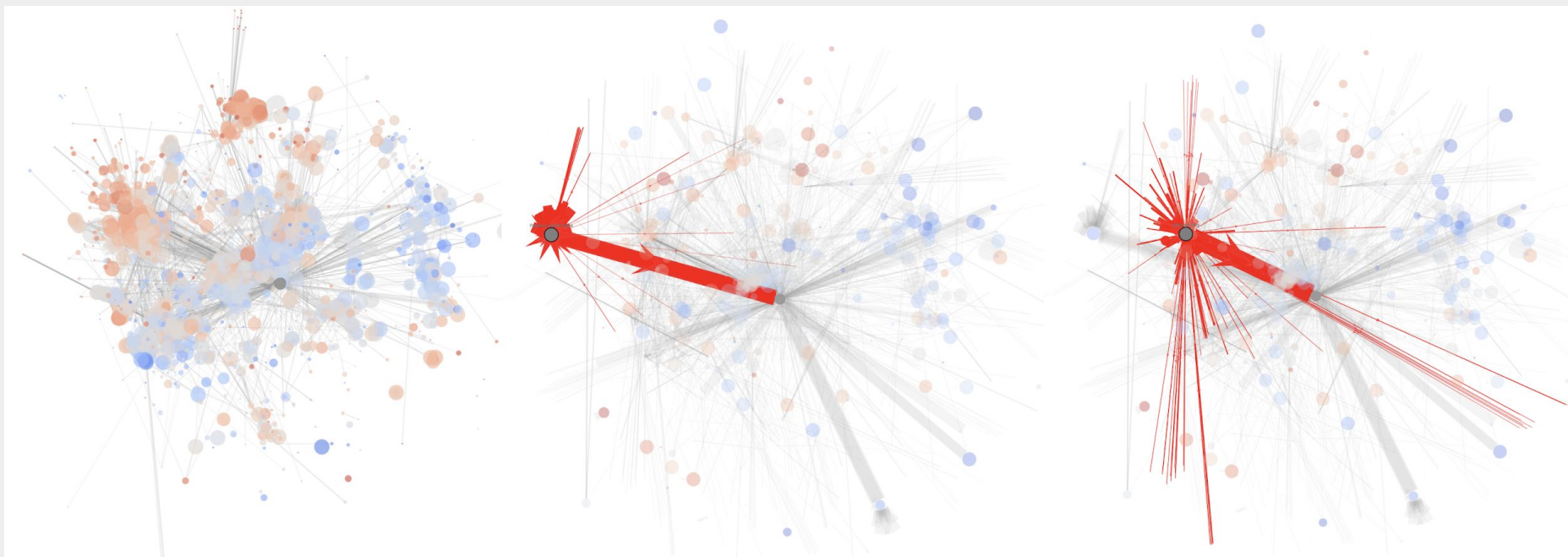
Results for identifying unmet needs

Tweet Full Text	Label	Sentiment	Location
@siddhagroup Plz don't fool people. We r residents of Siddha Galaxia Oceania block. We r suffering from poor quality windows, bedrooms of residents flooded during Amphan cyclone. Lifts are not working since Amphan cyclone. No update from Siddha when the lifts will be repaired. Shame on u.	Housing	-0.8589	Kolkata, India
@PMOIndia @narendramodi Khejuri Block II in East Medinipur District, West Bengal is completely destroyed caused to Amphan Cyclone Yesterday. Almost 250 Homes has been destroyed completely. I request to all Administrator to look into this area so that Khejuri Block II gets Proper help this time atleast.	Housing	-0.6326	Kolkata, India
This year, we will undergo huge crisis of food n income bcoz of Rabi crop loss n delay of kharif crop bcoz of Cyclone & Covid 19. We request @CMO_Odisha @Food_Odisha @stscdev to support us in this distress n provide crop insurance, food grains n crop storage @MoSarkar_Odisha	Farm	-0.7964	Odisha, India
@TimesNow After amphan the situation in Kolkata: No power for five days in the Tollygunge area. TMC goons beating up women for protesting. The councillor of ward 96 making fake promises. Please telecast this in your channel. We want a response. For the la	Criticism	-0.6124	Kolkata, India

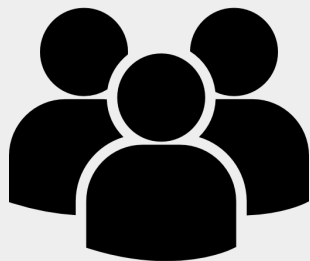
Approach to identifying narratives and influential users



Results for identifying narratives and influential users

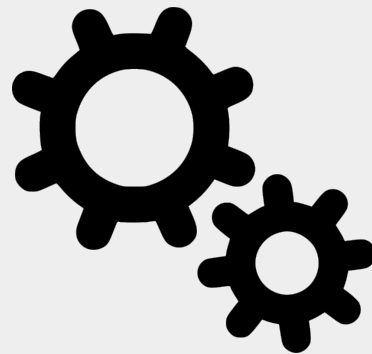


Future work



Evaluation and validation
through crowdsourcing

Build end-to-end system
reusable for any natural
disaster



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workshop



Thank **you!**