

Tweet, Reaction, Action

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Introduction

Methods

Logistics

Introduction

Incitement: a timeline of Trump's inflammatory rhetoric before the Capitol riot

The president, his family and his allies made disturbing remarks in the run-up to Wednesday's

Tech

Coronavirus: Twitter bans incitement to attack 5G towers

23 April 2020

TECH & MEDIA

Far-right group takes victory lap on social media after violence in Manhattan

"I have a lot of support in the NYPD, and I very much appreciate that, the boys in blue," said Gavin McInnes, the founder of "Western Chauvanist" group Proud Boys.



- Newsrooms
- Large volume of tweets
- Manual labour by experts
- Time-intensive

Preliminary Goals

- Investigating AI based preselection
- Starting point: apply *NLP* and *sentiment analysis*

Why is this hard?

- Short, informal messages
- Sentiment \neq intent
- Context matters



Bob@b0b · 2h

Anybody up for an end of summer BBQ?
My treat!

Context Matters



Alice@apliddell · 2h
Govt putting up another #5G #corona
mast in town.



Bob@b0b · 2h
Replying to @apliddell
Anybody up for an end of summer BBQ?
My treat!



Alice@apliddell · 2h
Replying to @b0b
I'll meet you there, will bring the petrol!

- Investigating AI based preselection
- Starting point: apply *NLP* and *sentiment analysis*
- Informed by *pragmatics* and *discourse analysis* for considering discussion structure
- Ethical Recommendations

Methods

- Using *BERT* to get initial *intent-embeddings* for tweets
 - Training on sentiment / intent
- Tracking initial embeddings in *conversational trees*
- Analysis of flow of intent in conversational trees
- Learning to predict in advance where to look

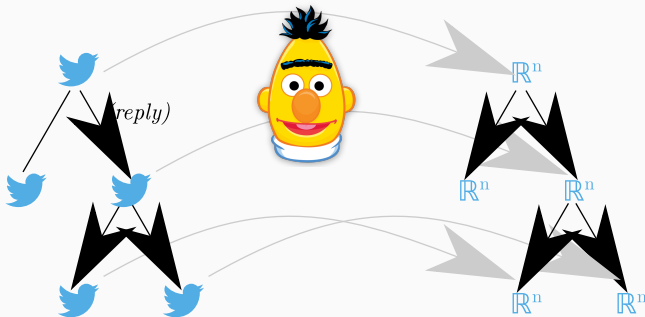
- Google AI
- Bidirectional Encoder Representation from Transformers
- Dual to GPT
- Transfer Learning
 - Pre-trained
 - Fine-tuning



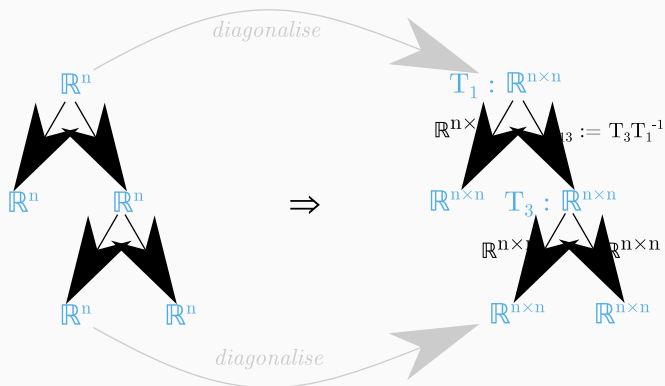
- Tweets can have “reply to” relation
- Structure extractable[†] via Twitter API
- Possible to construct conversation trees

- Interpretation as Presheaves / Sheaves
- Method for associating data to topological structure
- Structure provided by conversation trees
(simplified graph topology)
- Data in the form of vectors and linear transformations

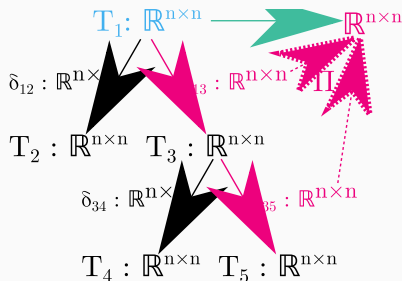
Initial intent labeling



Forward Search — Vertex to edge



Backward Consolidation — Connected edges to subtree flow



$$\begin{aligned}
 T_1 &\mapsto \delta_{12} \\
 T_1 &\mapsto \delta_{13} \\
 T_1 &\mapsto \delta_{34}\delta_{13} \\
 T_1 &\mapsto \delta_{35}\delta_{13} \\
 T_3 &\mapsto \delta_{34} \\
 T_3 &\mapsto \delta_{35}
 \end{aligned}$$

Learn **relations** between each **origin tweet** and **paths**

Logistics

- Project proposal phase ending
- Research phase starting
- Projected end — February

Challenges

- Twitter data extraction
 - Up is easy, down is hard
- Finding or making labeled training data
- Fine-tuning BERT
 - Computationally expensive

Questions?