



Just-In-Time
Inc.

Presented By:
Wen Yusheng



EVIDENCE-BASED POLITICAL ANALYSIS IN THE AGE OF SOCIAL MEDIA

For aspiring political analysts



Political parties increasingly use social media to deliver their messages

What sets their social media posts apart?

Can we identify a political party by solely examining its social media post?

Yes, we can.

- *Barack Obama*



@WPSG



@PAPSingapore

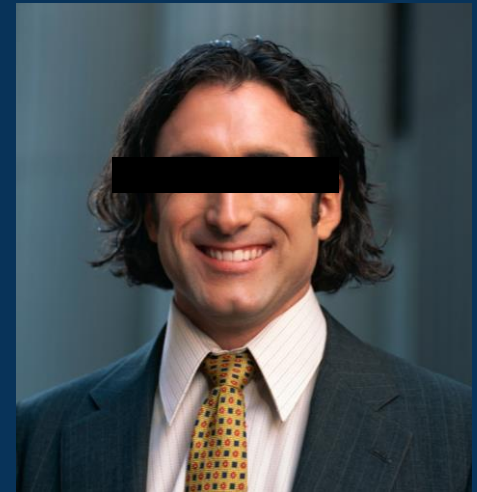
★ What political analysts say... ★



"PAP's tweets are more pro-government"



"WP actively engages the ground by replying to tweets"



"WP's tweets are more critical and negative"

★ What we say... ★



QUANTIFYING QUALITATIVE INTUITION



What are the differentiating features of PAP and WP's Twitter accounts? Can we identify the party just from the tweet?



- Can we? -

According to research*...

★ Tweets differ by 5 key aspects ★



Messaging



Tone



Content Type



Frequency



Level of
Engagement

According to research*...

★ Tweets differ by 5 key aspects ★



Tweet



Sentiment Score



Link/Video/Photo



Reply/Thread



Messaging: differing focus



PAP Singapore @PAPSingapore · Jun 29, 2020

From saving jobs and identifying new opportunities amid **Covid-19**, to **transforming Singapore** into a sustainable city, our **PAP leaders** gave insights into the thinking behind PAP's GE manifesto: Our Lives, Our Jobs, Our Future.

Read here for more: tiny.cc/poijrz



The Workers' Party @wp sg · Jul 4, 2020

If you elect more **WP MPs** to Parliament, we can **make the voices** of Singaporean workers who've been left behind during this pandemic louder.

To read about our ideas for a post-**COVID** Singapore visit: wp.sg/manifesto/



Messaging: tweet about their own people and constituencies

lee hsien loong secretary general
pm lee nee soon
hsien loong
lee hsien
pm leehsienloong
prime minister
mr lee
kuan yew
swee keat
esm goh
sg leehsienloong
stay tuned
lee kuan yew
takes stage
covid 19
pm leehsienloong
lee kuan
heng swee



thia khiang nee soon png eng huat
aljunied grc low thia mr low
low thia khiang ting ru
gerald giam east coast
workers party
pritam singh png eng
eng huat
rally speech sylvia lim li lian
punggol east world parliament jenn jong



Tone: different sentiments on the same topic



PAP Singapore @PAPSingapore · Aug 14, 2015

Mr Amrin: I hope to play a part in ensuring that the Singapore Dream remains alive, good opportunities available for Singaporeans #PAP4SG

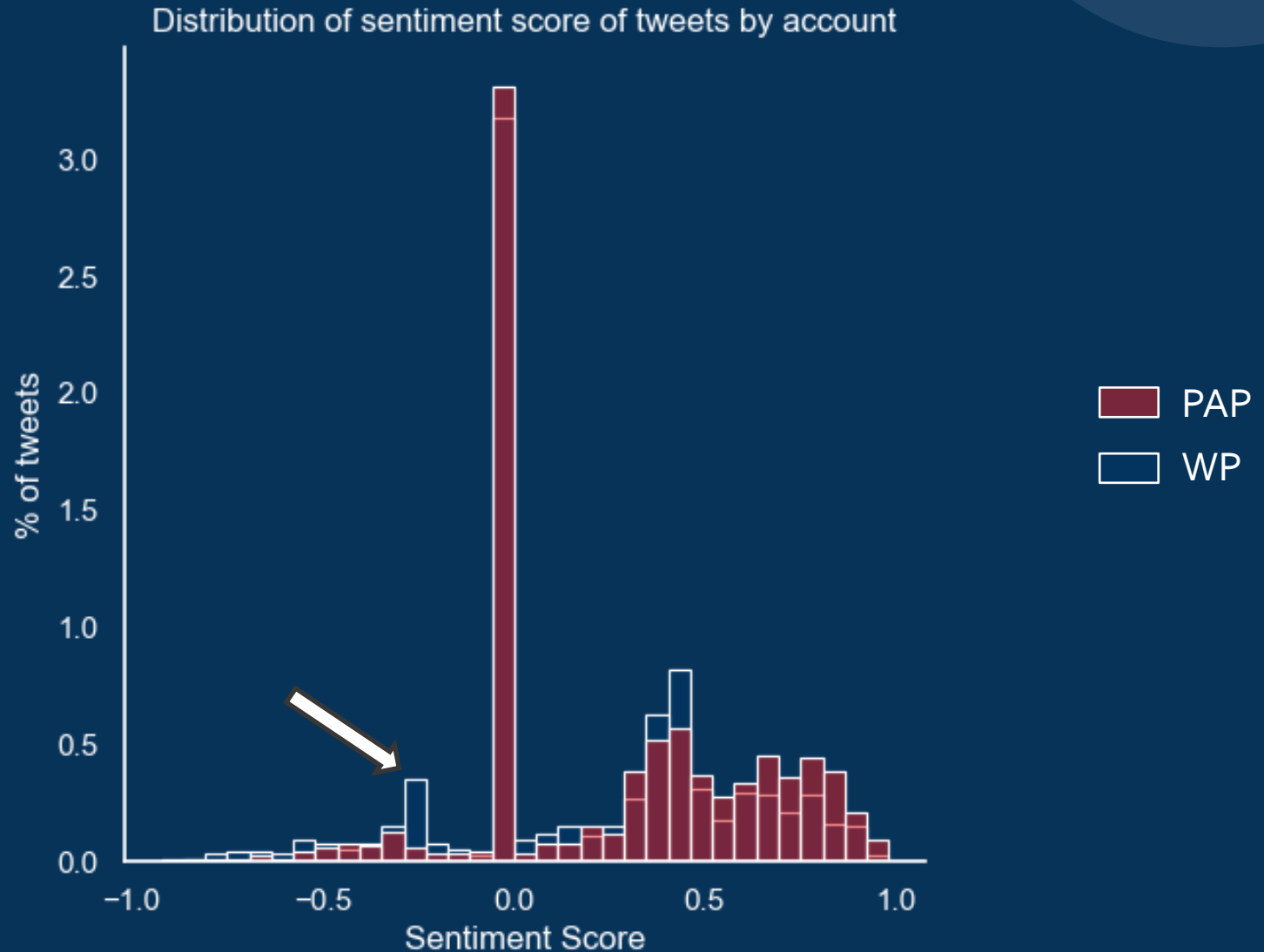


The Workers' Party @wpsg · Sep 3, 2015

Mr Low: We must hammer home the message that the people are the **masters** of Singapore, not the PAP! #EmpowerYourFuture



Tone: WP tweets tend to be more negative





Content type: a variety of different visuals and links



PAP Singapore @PAPSingapore · Feb 8, 2018

According to latest figures from the Department of Statistics, families staying in 1 and 2-room **HDB** flats continued to receive more Government transfers than those in other housing types.

Read the full news report at bit.ly/2FVoNP4

MORE SUBSIDIES FOR LOW-INCOME FAMILIES



1 and 2-Room HDB households received



on average
\$10,425

Other housing types



on average
\$4,433

Source: Singapore Department of Statistics

WITH YOU FOR YOU FOR SINGAPORE



The Workers' Party @wp sg · Feb 5, 2018

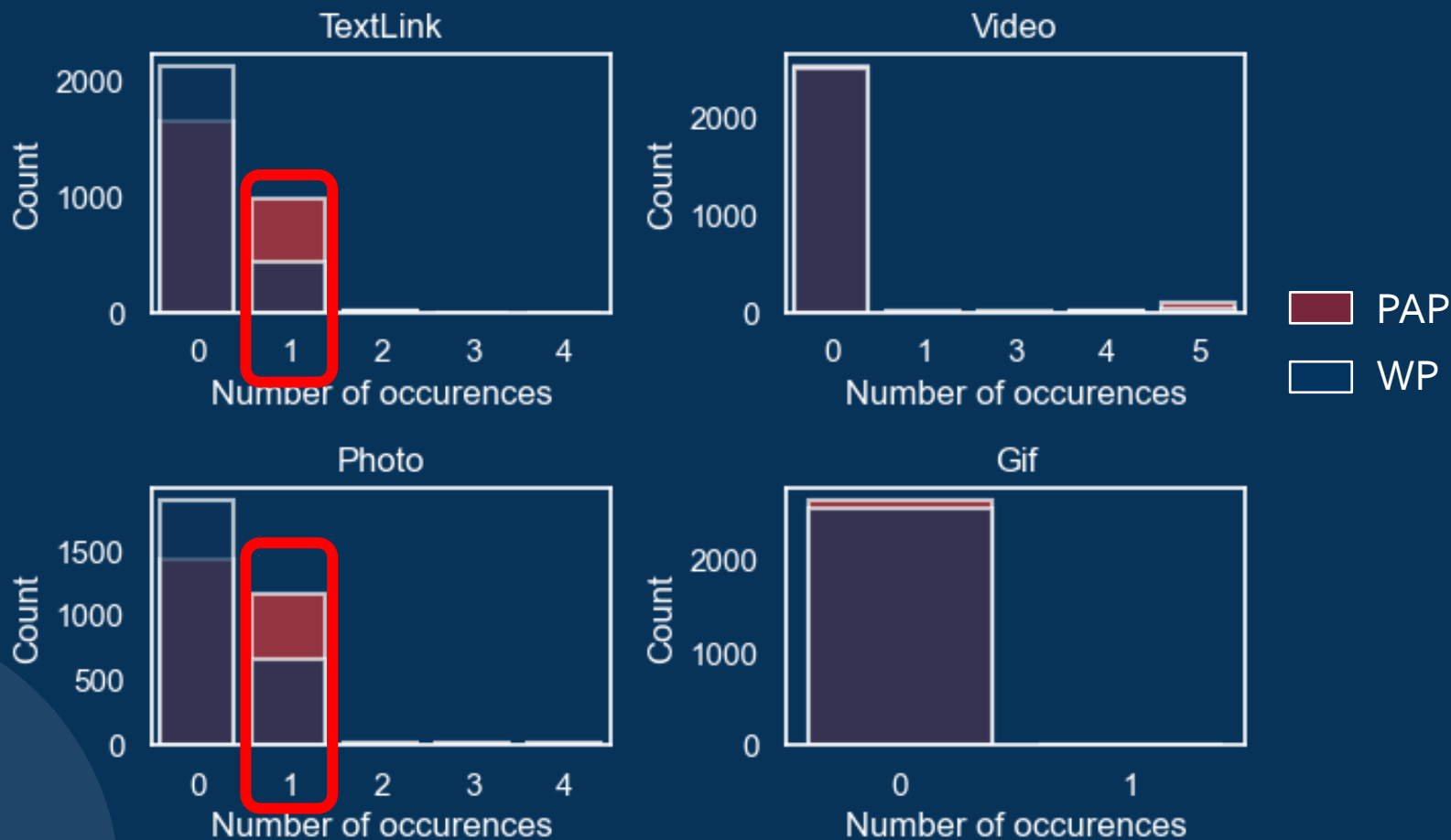
From **HDB** upgrading for older flats to flood management plans in the East, here are just a few of the pertinent questions WP MPs are asking in Parliament this month:



Video

Content type: PAP tend to have more links and photos

Distribution of content types by account





Engagement: replies, likes and quotes all count



PAP Singapore @PAPSingapore · Jun 8, 2020

Replying to @qazimzim

Great question, @qazimzim, and I like how you are looking out for the seniors! We are equally concern about the well-being of seniors. We are moving in a big way to get everyone onto the digital platform.



The Workers' Party @wpsg · Jul 2, 2020

"What we are trying to deny the PAP isn't a **mandate**. What we're trying to deny them is a blank cheque." – @jamuslim #GE2020

(Vid credit: Channel 5)

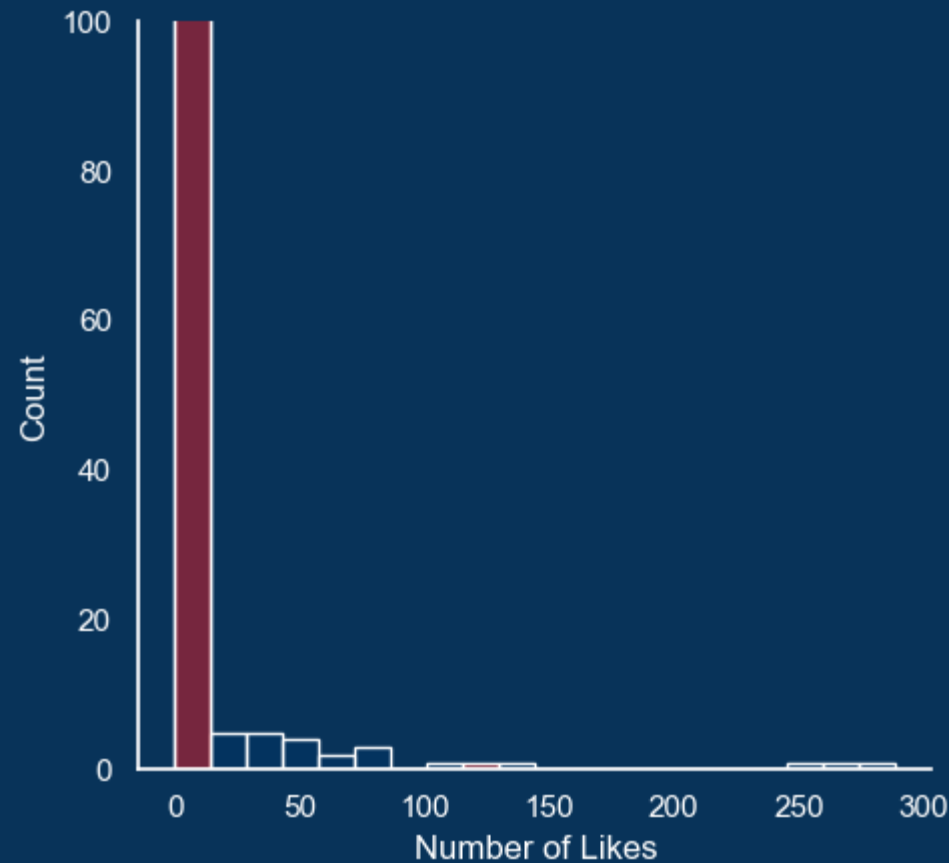


0:36 123.5K views

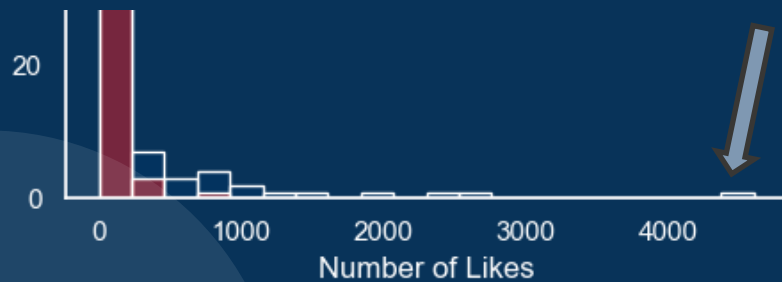
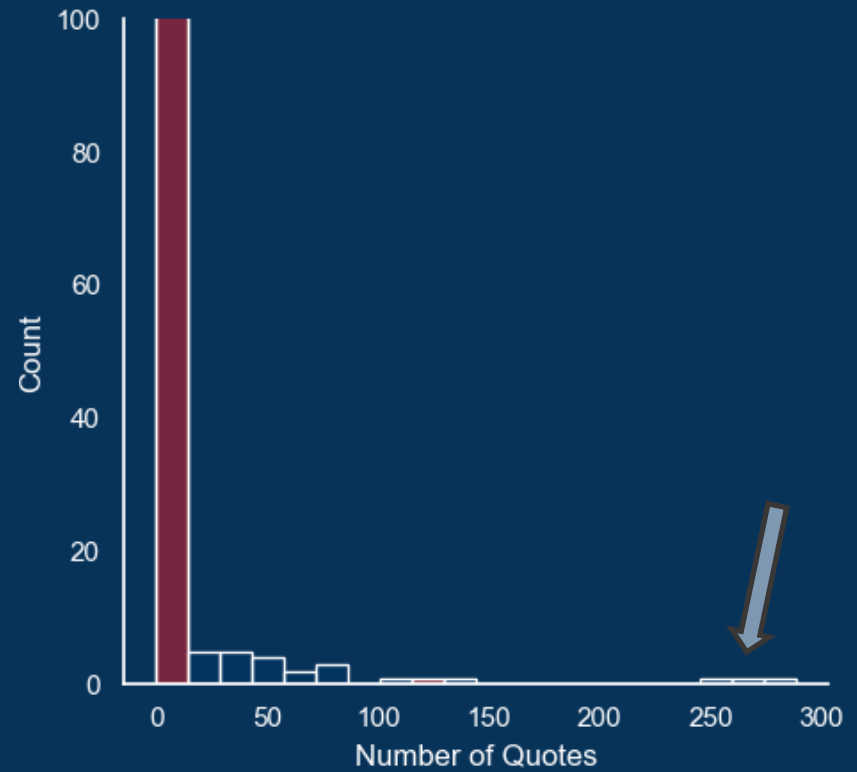


replies, likes and all count

Distribution of Likes by account



Distribution of Quotes by account

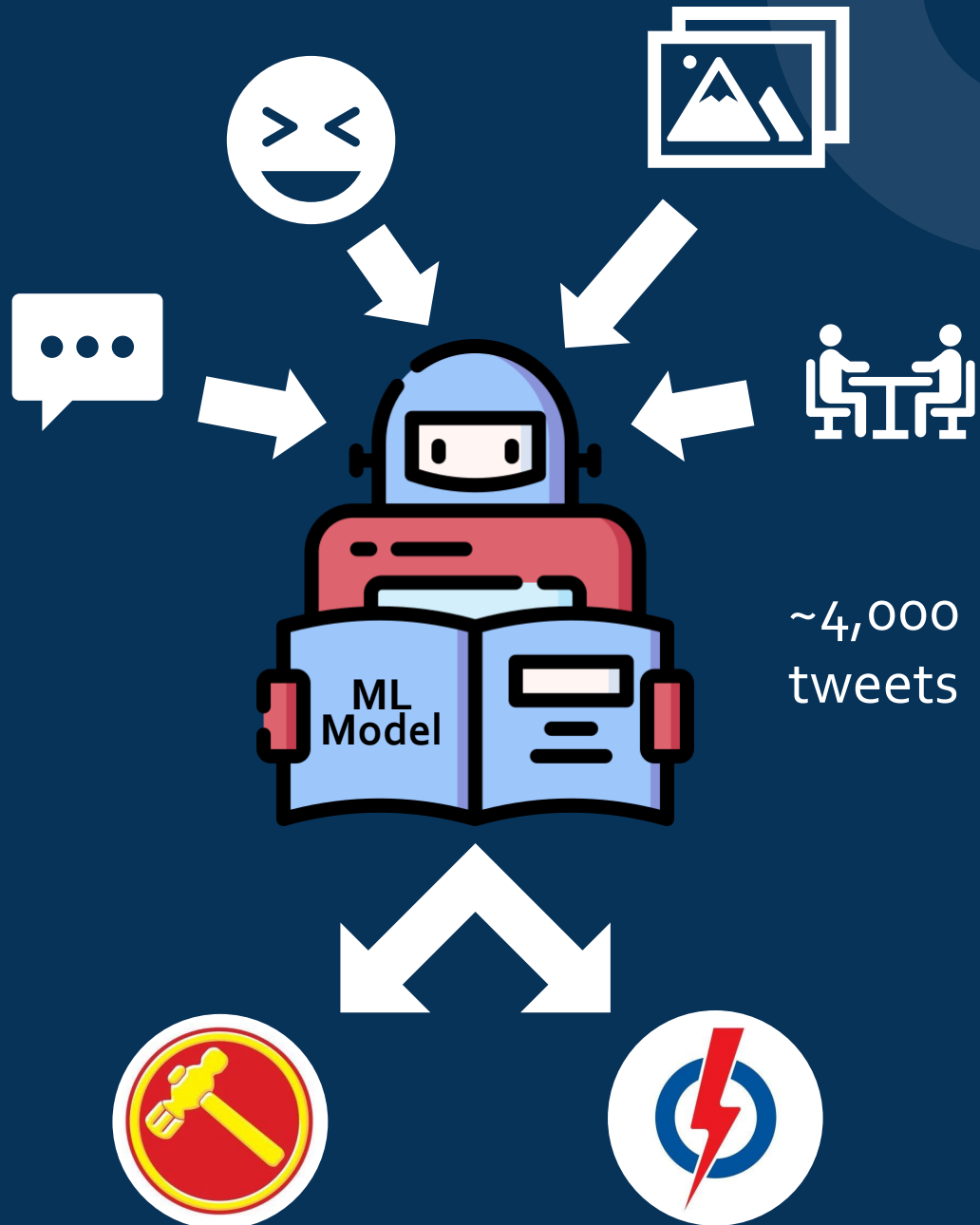


Predictive Model for Tweets

Precise: high proportion of positive classifications are accurately correct

Sensitive: high proportion of actual positives correctly classified

Aim to get as many tweets correctly classified from both accounts



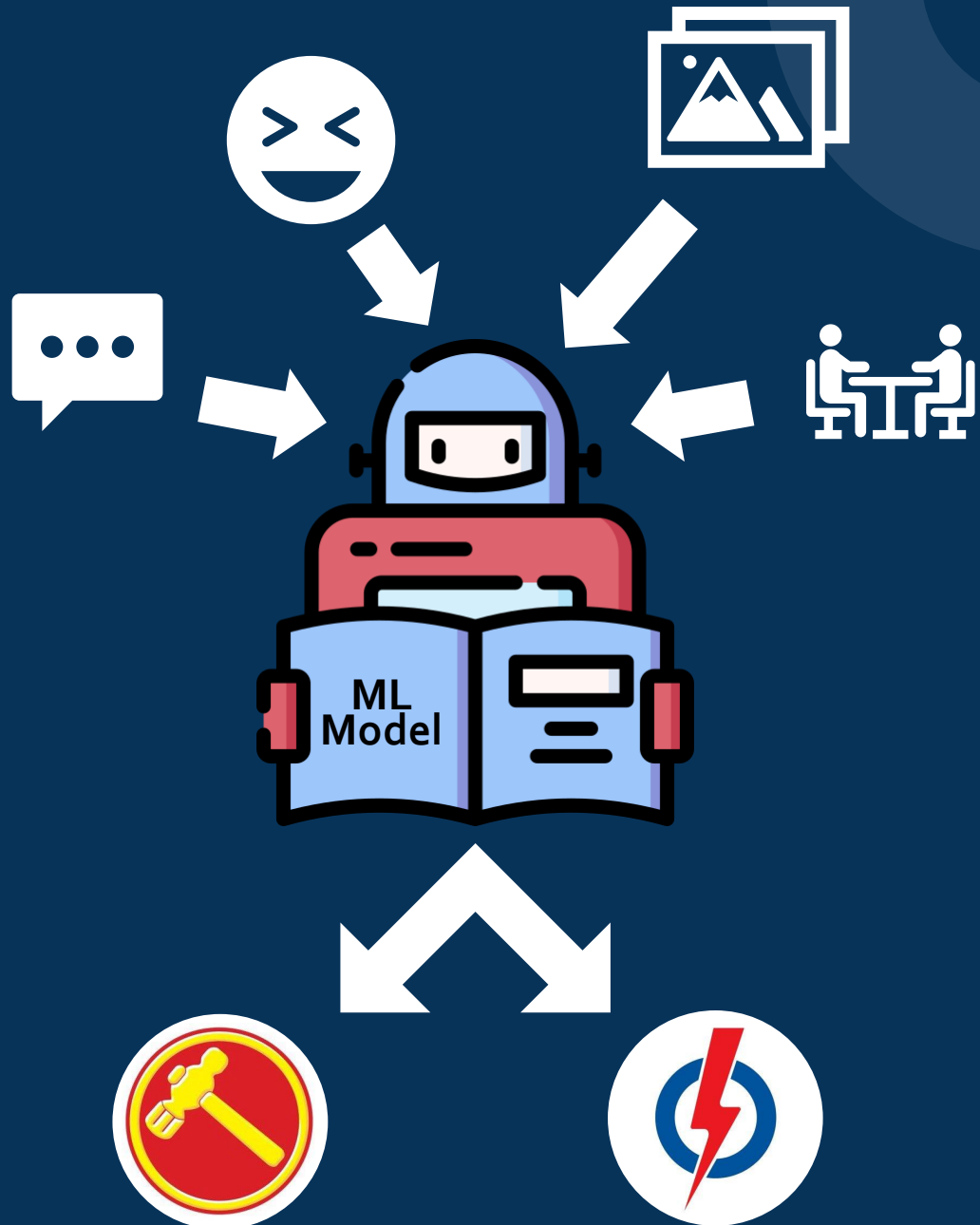
Predictive Model for Tweets

Precise: high proportion of positive classifications are accurately correct

F1 Score

Sensitive: high proportion of actual positives correctly classified

Aim to get as many tweets correctly classified from both accounts

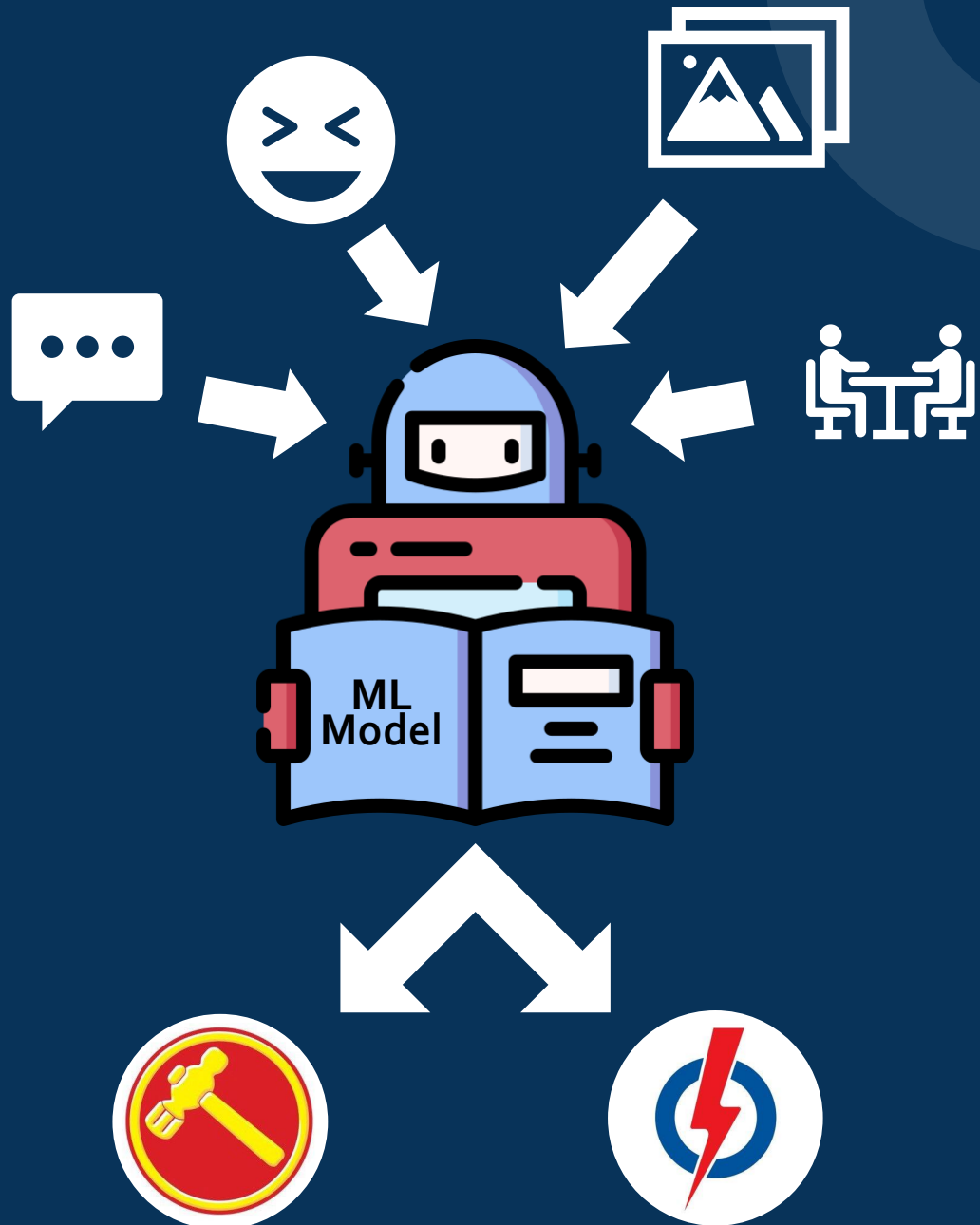


Predictive Model for Tweets

Precise: high proportion of positive classifications are accurately correct

Average F1 Score

Aim to get as many tweets correctly classified from both accounts



3 different models tuned



Logistics Regression

0.921

Random Forest

0.914

Naïve Bayes

0.9190

Starting off with just the tweet content alone, the performance of the models are close and commendable

3 different models tuned



Logistics Regression

0.941

Random Forest

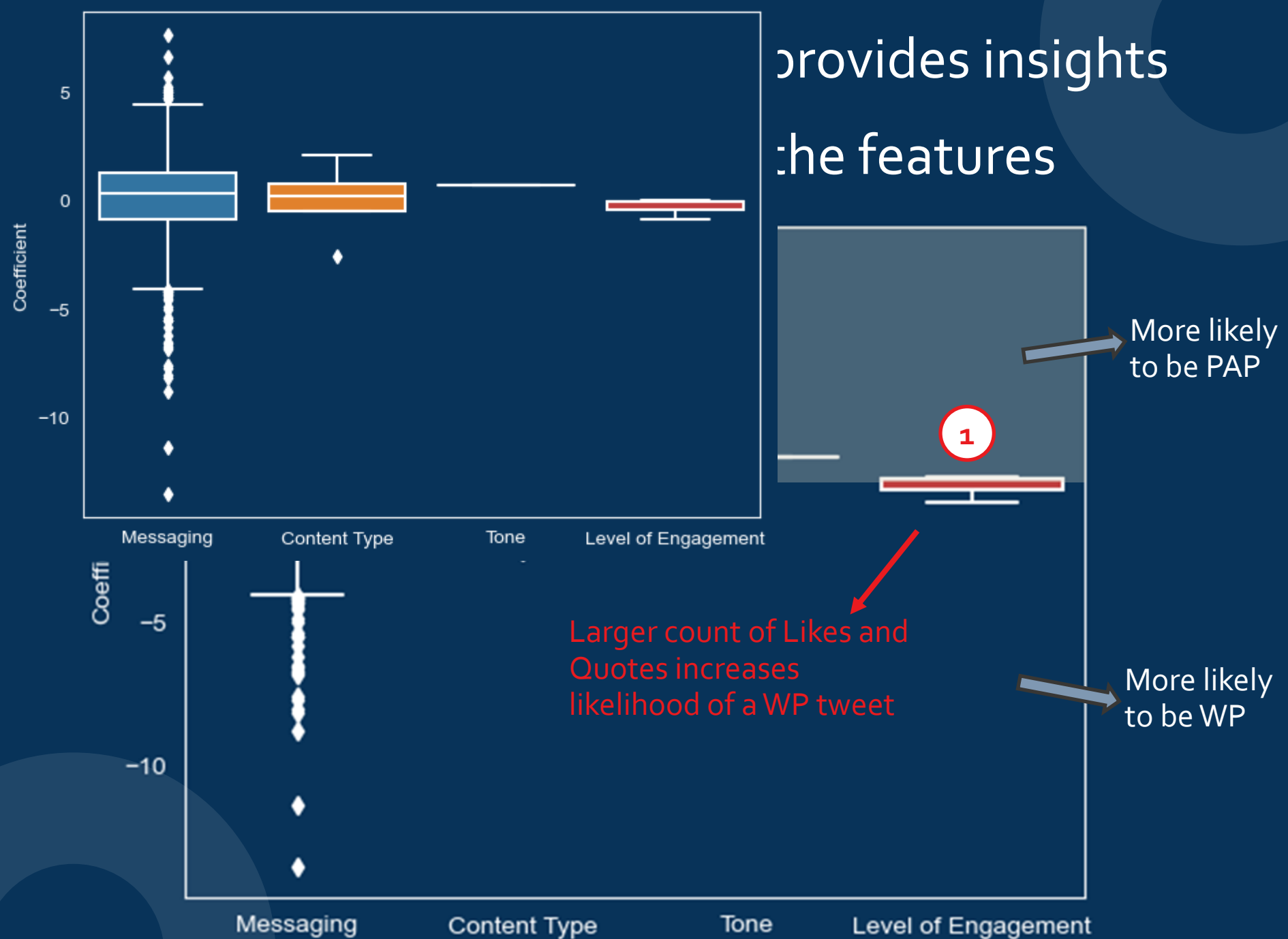
0.925

Naïve Bayes

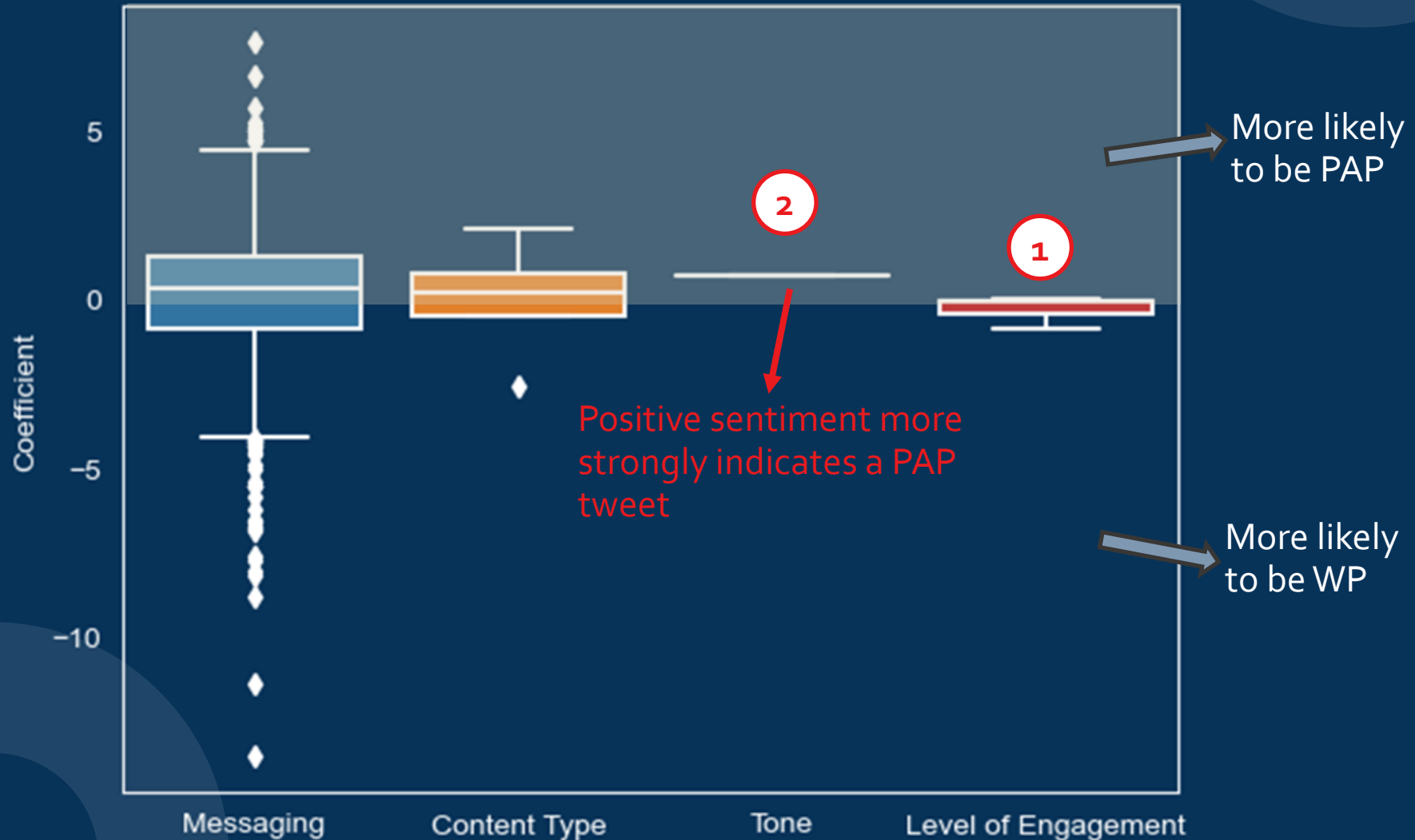
0.9170

Additional aspects
of the tweet
further improve
performance

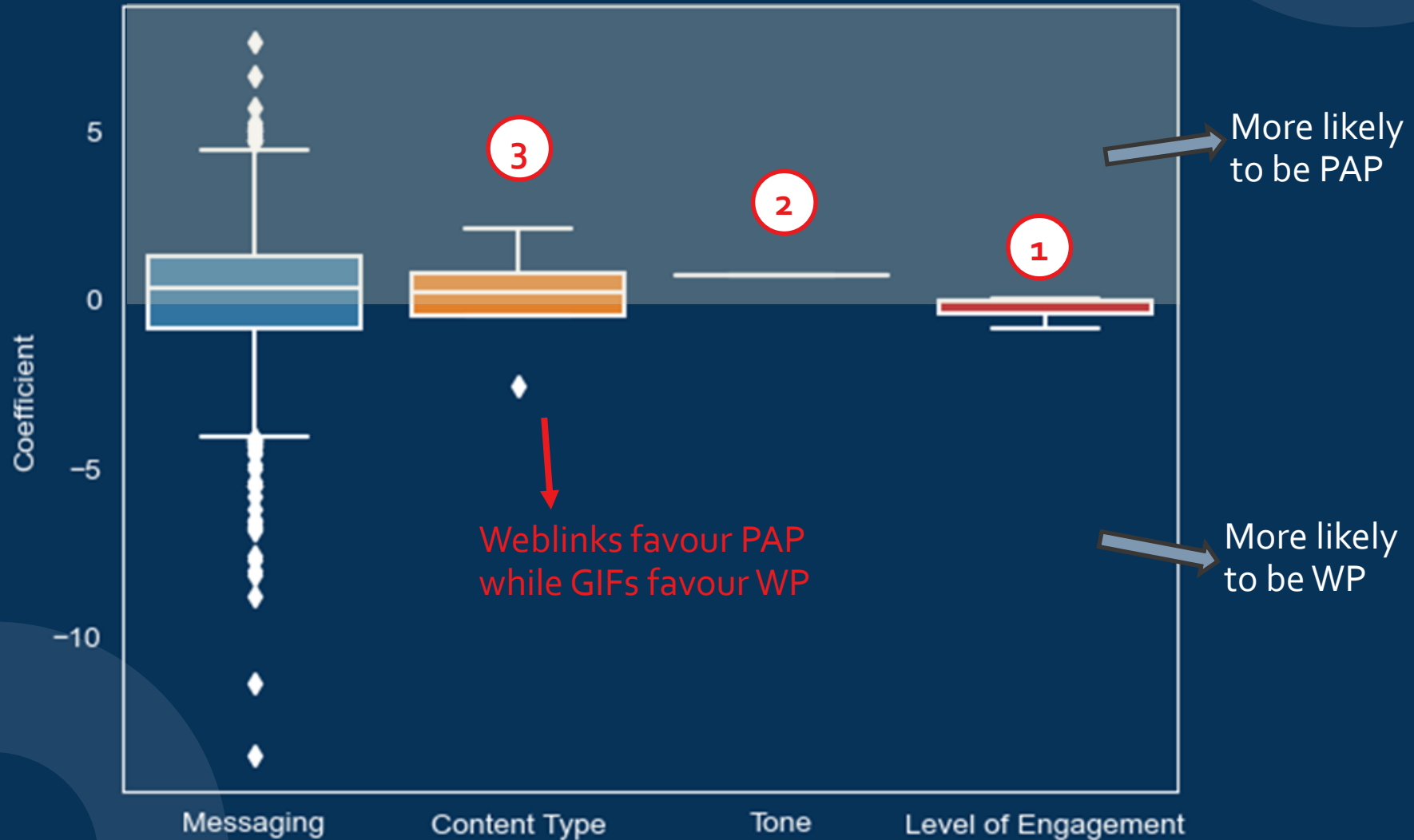
provides insights
the features



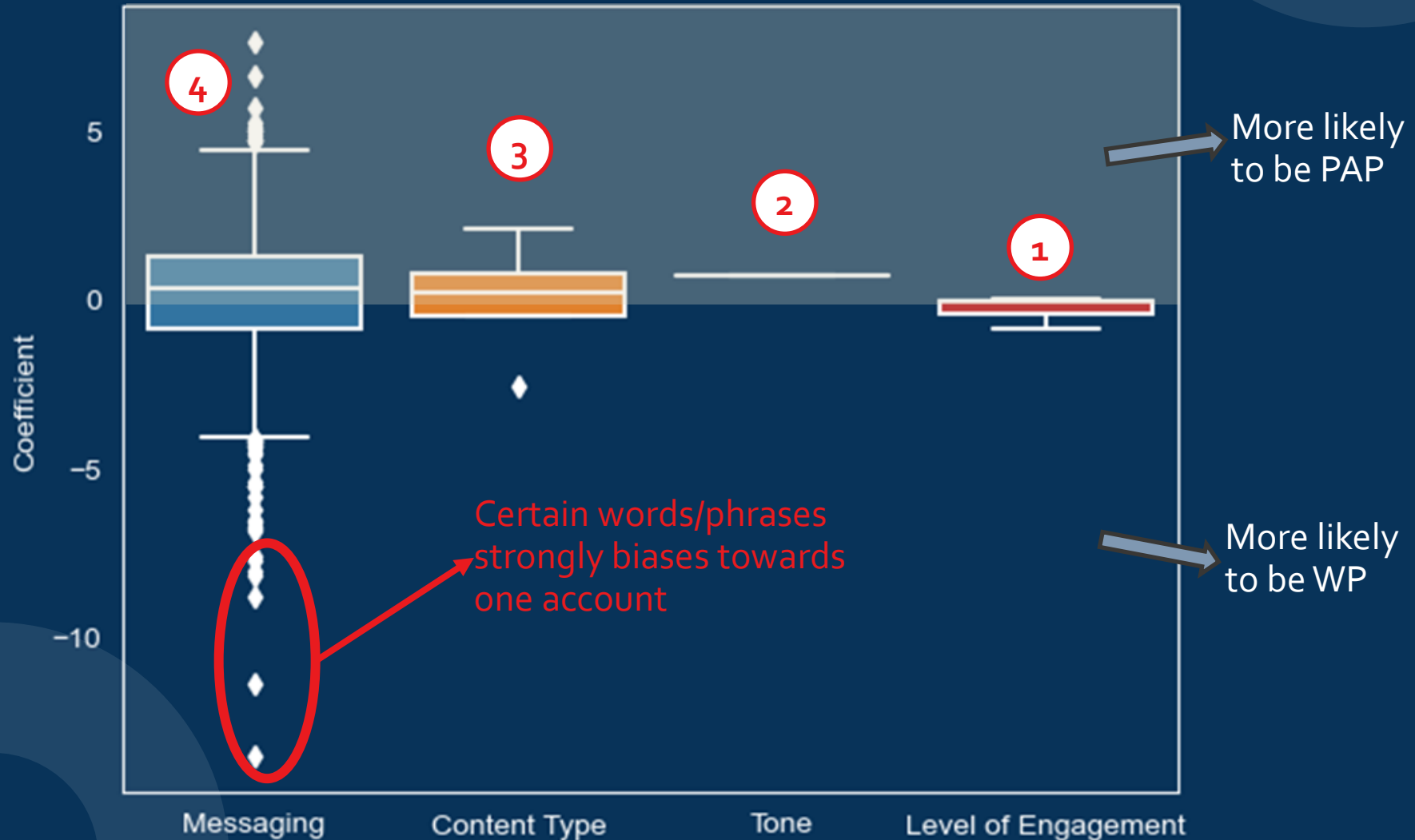
Logistic regression model provides insights on the importance of the features



Logistic regression model provides insights on the importance of the features



Logistic regression model provides insights on the importance of the features



strongly
count



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QUANTIFYING QUALITATIVE INTUITION



What are the differentiating features of PAP and WP's Twitter accounts? Can we identify the party just from the tweet?

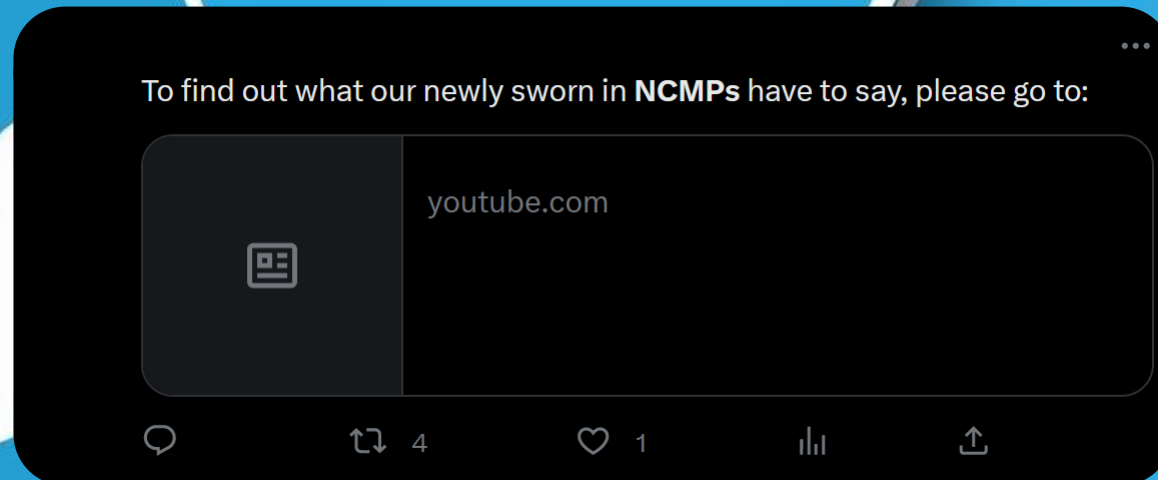


- Yes, we can! -

The model is not perfect as some classifications are still wrong



Some mis-classifications suggest that more features and a better model can be considered for future work



The model is not perfect as some classifications are still wrong

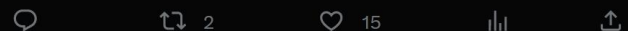


Some mis-classifications suggest that more features and a better model can be considered for future work

Here's wishing all **fathers** good health, happiness and a Happy [#FathersDay!](#)



Wishing all **fathers** a happy and blissful Father's Day!



The model is not perfect as some classifications are still wrong



Some mis-classifications suggest that more features and a better model can be considered for future work



Some tweets are too vague that even humans may not be able to correctly identify

Replying to @lightmage81
@lightmage81 **which one?**



This **Ah Ma** damn power! 50 years of service at the party!

facebook.com/photo.php?fbid...



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Message: The content matter the most, look out for commonly used phrases by each party!

Tone: PAP tweets are more likely to be positive and upbeat

Content Type: PAP tweets use more weblinks; WP tweets more GIFs

Engagement: WP tweets more likely to go viral

2:01 AM · Mar 18, 2023 · Samsung Smart Fridge

780 Retweets **50** Quote Tweets **4.9K** Likes





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THANK YOU

3 different models tuned

Model	Training Avg F1 Score	5-Fold Cross Val Avg F1 Score	Test Avg F1 Score
Baseline	0.337	-	
Messaging Only			
Naive Bayes Simplified	0.950	0.925	0.919
Random Forest Simplified	0.967	0.918	0.914
Logistic Regression Simplified	0.968	0.925	0.921
All Aspects			
Naive Bayes	0.924	0.902	0.917
Random Forest	0.937	0.918	0.925
Logistic Regression	0.974	0.939	0.941