

# Information Visualization

IFSC 5345  
Final Project – Movie Bar Code

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# About: MovieBarCode

- In 2016, a great event happened, we had a new President in the U.S
- Many believed that information warfare happened during the election
- Youtube Videos, Twitter, Facebook were major platforms that were used during election for this warfare

# About: MovieBarCode

- We have a problem, *information is being manipulated for false purposes*
- In order to solve this issue of Information being manipulated, we need tools to navigate and confront it
- We want to find reliable content in these platforms

# About: MovieBarCode

- COSMOS, (Our Research) is working on state of the art techniques, research
- We work on tools to help researchers, industry to tackle information warfare
- Thus, MovieBarCode is one step towards the ultimate goal of reliable tools to fight Information Warfare

# About: MovieBarCode

- In Youtube, there's millions of videos being constantly uploaded
- During elections, *information is being manipulated for false purposes using automated fake Videos*
- In order to detect *automated fake Videos, people use bots to upload them*
- We need tools to detect them
- Our first prototype is MovieBarCode

# About: MovieBarCode

- MovieBarCode is a unique barcode generated from Youtube Video
- Every barcode is unique due to generation by frames
- No two Youtube Videos can have the same Bar Code

# What is the problem?

- *Information is being manipulated for false purposes through Social Platforms*

## How do we find this?

- We want to find fake Youtube Videos
- We want to find anomalies in Videos

# Current Method

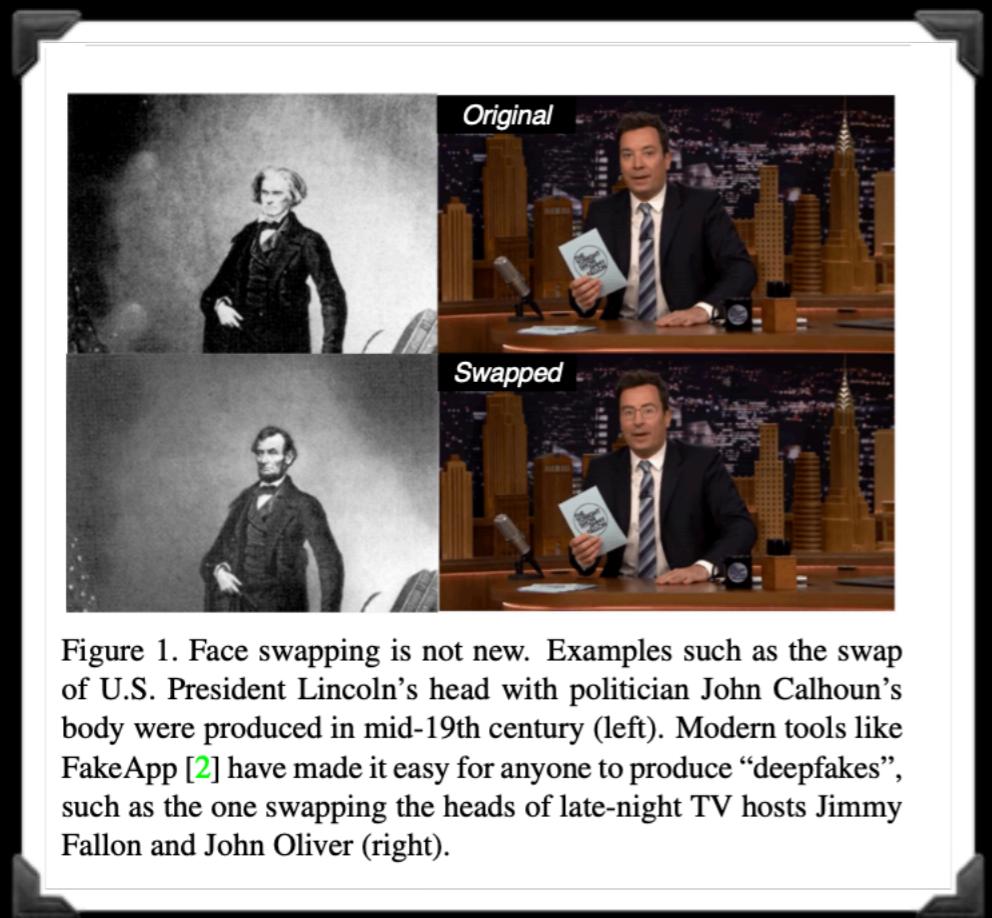


Figure 1. Face swapping is not new. Examples such as the swap of U.S. President Lincoln’s head with politician John Calhoun’s body were produced in mid-19th century (left). Modern tools like FakeApp [2] have made it easy for anyone to produce “deepfakes”, such as the one swapping the heads of late-night TV hosts Jimmy Fallon and John Oliver (right).

- Deepfake Video Detection Using Recurrent Neural Networks David Guera Edward J. Delp
- <https://engineering.purdue.edu/~dgueraco/content/deepfake.pdf>

# Current Methods

- Too complicated for average Journalist and User
- Too much time to detect
- Not able to detect on Videos

# Our Response

- Simple and easy to use
- Apply Visualization
- Does not require much training
- Click and Play

# Can we solve this through a Visualization?

- Yes, through MovieBarCode
- Simple and Easy to use
- First of a kind prototype

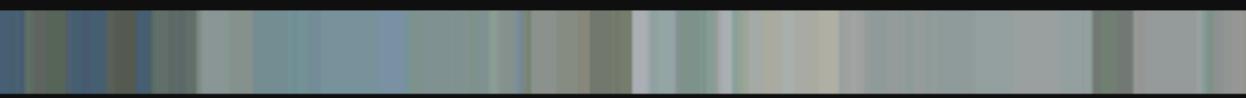
# MovieBarCode: Our Goals

- Theory
- Beats Alternatives
- Coding Challenge
- Data Difficulty
- Our Task
- Extremely Useful

# MovieBarCode: Tufte's Principle

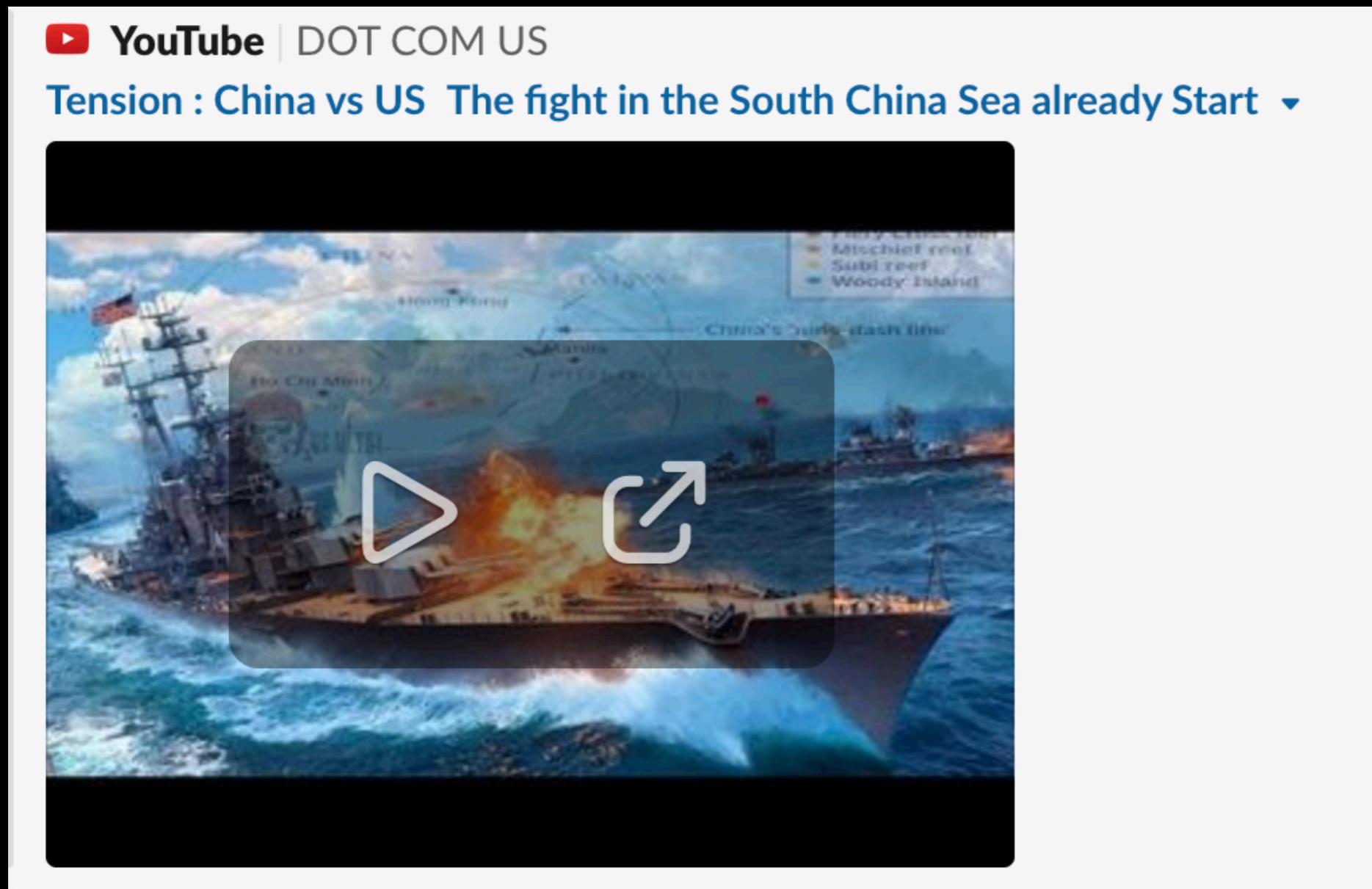
- Maximize Data - Ink ratio
- Avoid ChartJunk
- Use Small Multiples

# MovieBarCode: Tufte's Principle

-  RAISING CUTE PANDAS: IT'S COMPLICATED | NATIONAL GEOGRAPHIC
-  DILBERT - THE KNACK "THE CURSE OF THE ENGINEER"
-  DILBERT - THE FUN OF HISTORY
-  DILBERT - ENGINEER'S PERSPECTIVE OF ART (CLIP)
-  DOGBERT IS A GOD
-  DILBERT DOES IT FEEL GOOD TO GIVE ?

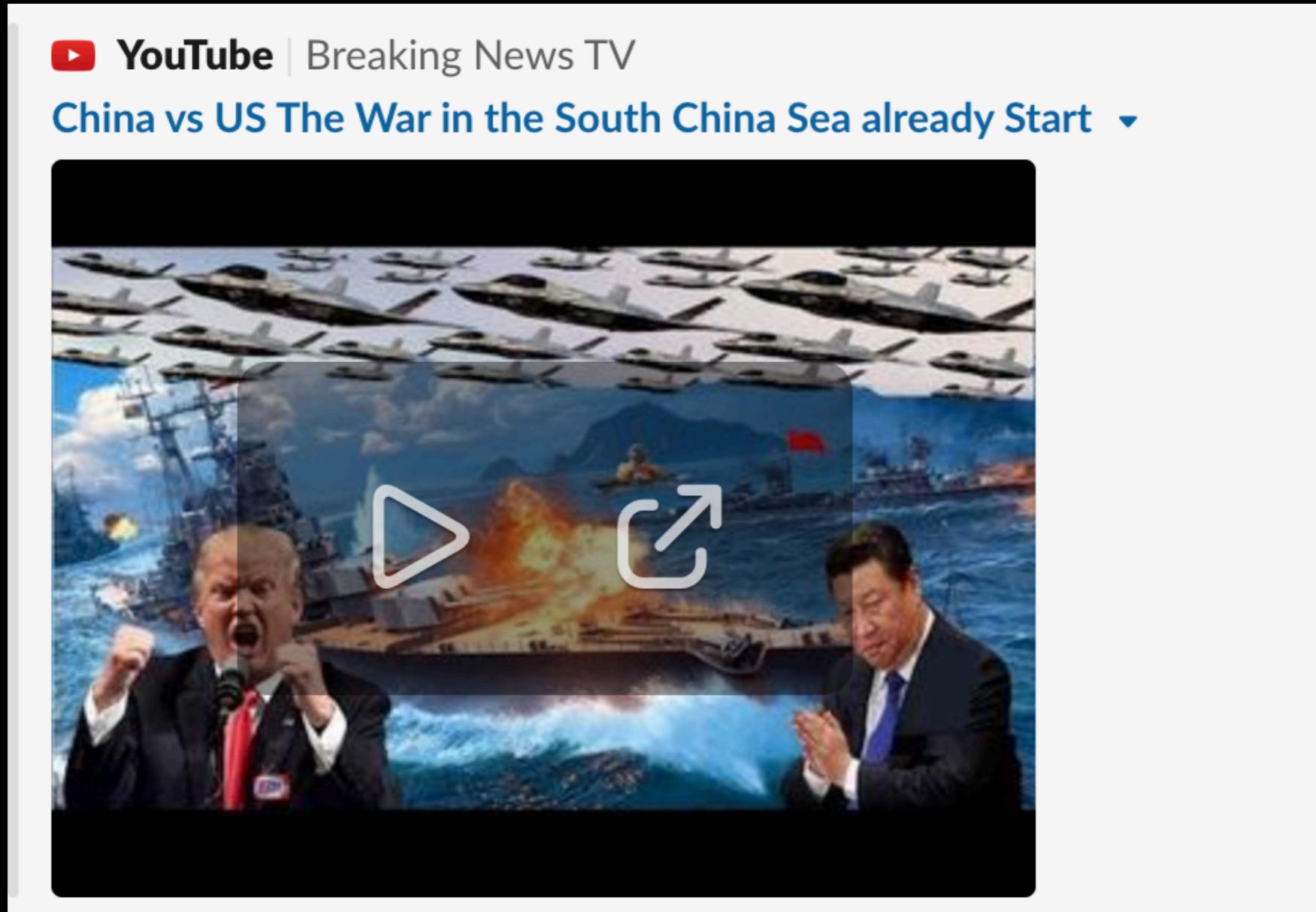
- Use Small Multiples

# MovieBarCode:Visualization



- Actual Video: China vs U.S

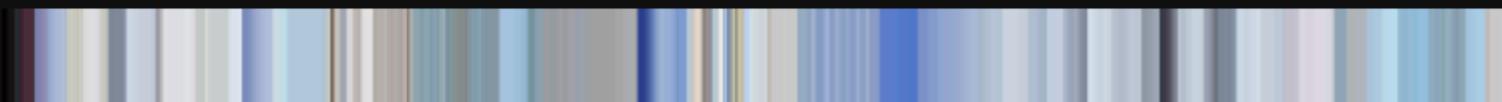
# MovieBarCode:Visualization



- Using Memes within a Video (Fake)

# MovieBarCode:Visualization

Which one is Fake?

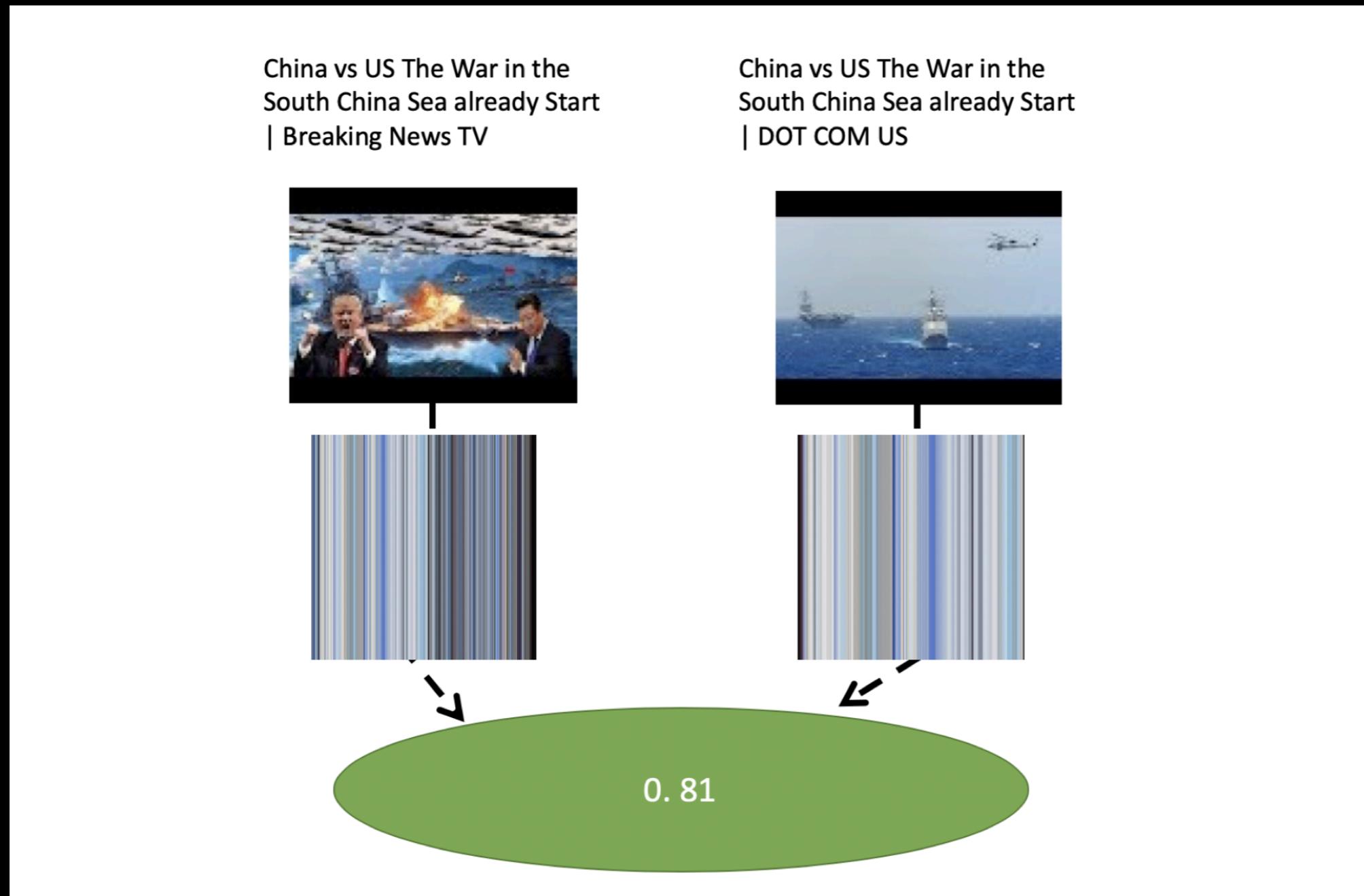
-  CHINA VS US THE WAR IN THE SOUTH CHINA SEA ALREADY START
-  TENSION : CHINA VS US THE FIGHT IN THE SOUTH CHINA SEA ALREADY START

# MovieBarCode:Visualization



- One Video Embedded to another one

# MovieBarCode:Visualization



- Similarity Score

# Algorithm

- User provides Youtube videos
- Query Youtube for video information
- Stream video
- Generate barcode
- Store locally
- Generate job-lib file for each cluster
- Generate 2D plot comparing each job-lib files
- We use Django to display resulting plot

# Final Prototype

Youtube Video Characterization

About Contact

BAR CODE GENERATOR  
WELCOME TO YOUTUBE MOVIE BAR CODE GENERATOR.

<https://www.youtube.com/watch?v=OM5vaF2kzPA>

Generate Now

0:00 / 1:43

Dilbert - The Knack "The Curse of the Engineer"

DIEHARDave • frames • JSON Download

- CHINA VS US THE WAR IN THE SOUTH CHINA SEA ALREADY START
- TENSION : CHINA VS US THE FIGHT IN THE SOUTH CHINA SEA ALREADY START

T-SNE Visualization for 6 classes

APAC  
BalticOps  
ffauder17games  
hbosilconvally  
manugnobilgames  
spongebobsquarepants

GENERATED BARCODE

Designed with ❤ by Erol Recep, Rick Rejeleene for Youtube Trackers

# Demo

# Contributions

- Recep: Algorithm and Design in Python (BarCode, Tsne), Api for data querying, video stream from youtube.
- Rick: Python, Slides, Django, JQuery, UI/UX, CSS and Design, ReadMe
- Thomas: Python, Feature Testing, Integration, Live application, Demo, YoutubePlaylist

# Thanks

Erol Recep  
Thomas Marcoux  
Rick Rejeleene  
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