Video-as-data in computational social science

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数据来源: Pew Research Center, Douyin

Single modality (text)

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Abstract, requires more cognitive efforts

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Video content

Multiple modalities

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Video content



@央视新闻4天前 2021年1月1日,天安门首场升 旗仪式!迎着新年的第一缕阳光, 和祖国一起,阔步向前!



Visua

Audio

Single modality (text)
Abstract, requires more cognitive efforts

Video content

- Multiple modalities
- Directly portrays the reality >> faster information processing, better recall, more powerful emotional responses
- Induces more trust and engagement

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Video content

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- Widely explored in traditional media effects studies, but rare in quantitative analysis.







lmage-as-data

Joo & Steinert-Threlkeld, 2018 Casas et al., 2020

- Recent breakthroughs in computer vision and machine learning can be applied to incorporate large scale image data in social science research
 - Deep learning frameworks (CNN, R-CNN, LSTM.....)
 - Off-the-shelf APIs (Face++, Google Vision API, etc.)

Video-as-data

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- Analyzing videos is more challenging:
 - Videos are multimodal >> complexity in features and their interactions
 - Requires a large dataset to train an accurate classifier for full automated methods



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ARTICLE

The Pervasive Presence of Chinese Government Content on Douyin Trending Videos

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Motivation

- Proliferation of social media drives expansions of propaganda strategies (Bjola 2017; King et al. 2017; Lu and Pan 2020; Marwick and Lewis 2017; Sanovich 2017; Woolley and Howard 2017)
- Video-sharing social media platforms: incorporated into propaganda work (Confessore and Wakabayashi 2017; Golovchenko et al., 2020; Wilson & Starbird, 2020)

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- Video-sharing social media platforms: incorporated into propaganda work (Confessore and Wakabayashi 2017; Golovchenko et al., 2020; Wilson & Starbird, 2020)
- China: government actively use Douyin to communicate directly with the public, to disseminate propaganda, and to promote "positive energy" (Chen et al. 2020) >> 25,313 government accounts (CNNIC, 2020)

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How does the Chinese government exercise propaganda on Douyin?

What are the features of state-affiliated videos on Douyin?

Data



Douyin Trending Page

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Data



- Douyin *Trending* Page
- March 2020 June 2020
- 50,813 unique videos from 9,946 topics

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- Multimodal data collection
 - Videos
 - Text accompanying videos
 - Meta-data

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Face presence

Brightness

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Frame sampling

Feature extraction /

analysis

- Global video-level features: duration
- Text accompanying videos: automated text analysis OR human coding
- Account data: human coding

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Pervasive presence of government content



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State-affiliated videos exhibit attention-eliciting features



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Propaganda videos do not dominate state-affiliated accounts



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Multimodal approach for video analysis: upgraded framework



- Integrate audio features (e.g., tempo) and semantic features (e.g., humor) into analyzing videos
- Integrate unsupervised clustering and derive three main types of fact-checking videos on Douyin



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Unpacking multimodal fact-checking: Features and engagement of fact-checking videos on Chinese TikTok (with Cuihua Shen @UCDavis)

Automated video classification



Rittmann, O., Ringwald, T., & Nyhuis, D. (2020). Pay attention to this! Explaining emphasis in legislative speech using automated video analysis in the US House of Representatives.

Video-as-Data in social science research

 Trigger by the abundance of digital images/videos and accelerated by the progress in computer science



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Future directions

 More studies on "motions," "transitions," and "semantics" through automated methods

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- More studies on "motions," "transitions," and "semantics" through automated methods
- More rigorous and systematic ways to validate results
- Special Issue "Image as Data" in Computational Communication Research

Thanks!

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