Decoding Political Advertising
Inferring Messages and Predicting Impacts

JUNGSEOCK JOO

UCLA
Advertising

- Promote products, brands, ideas.

- Core function of mass media
  ◦ Reduce cost for users.
  ◦ Advertisers buy the public attention from media.
Advertising

- Communicative activity
  ◦ Fundamental goal is *persuasion*.
  ◦ Argumentation.
Advertising

- Rhetorical techniques
  - metaphor, framing, exaggeration, distortion
Visibly more beautiful skin from the most unexpected of places – your shower.

Introducing Dove VisibleCare, our new revolutionary line of body washes that actually improves the look of your skin. With our highest concentration of NutriumMoisture®, you’ll see visibly more beautiful skin in just one week. NEW DOVE VISIBLECARE CREME BODY WASH.
Inferring Semantic Meaning

- Learning and inferring association between symbols (signs, words, visual objects, etc) and their meanings.

- Requires deeper understanding of context, physics, causality, culture, social customs, etc

(Ye & Kovashka 2017)
Political Advertising

- Promote politicians, parties, political agenda.
Political Advertising - Promote politicians, parties, political agenda.

Election 2016
MONEY RAISED AS OF DEC. 31

$1.4 B
$623.1 million  Hillary Clinton campaign
$598.2 million  Party and joint fundraising committees
$204.4 million  Super PACs

$957.6 M
$334.8 million  Donald Trump campaign
$543.4 million  Party and joint fundraising committees
$79.3 million  Super PACs

Spending Shift
Total political ad dollars in each election year

<table>
<thead>
<tr>
<th>Broadcast TV</th>
<th>Cable</th>
<th>Digital</th>
</tr>
</thead>
<tbody>
<tr>
<td>$6 billion</td>
<td></td>
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</table>

Ad Spending Per Voter In Dollars

$2.00  Republican
$1.00  Democrat

Source: Borrell Associates
THE WALL STREET JOURNAL.
Research Questions

- How do we infer the main argument from a political ad?

- What are the impacts of visual persuasion to the viewers—voters?
SpotCheck

- Randomized experiment in 2016 election
  ◦ Vavreck & Geer

AD ONE
Unfit

AD TWO
Daughters
SpotCheck

View Republican Party:
Favorable 30%
Unfavorable 50%

View Democratic Party:
Favorable 30%
Unfavorable 49%
Challenges

- Difficult to construct a general knowledge base
- Difficult to reason latent context dependent meanings of scene elements using the knowledge base
- Difficult to detect surface features from videos
Data Collection

- Historic collection of political campaign ads
  ◦ UCLA NewsScape TV News Archive
  ◦ Youtube
  ◦ Social media
UCLA NewsScape TV News Archive

- International TV news videos from 20+ countries
  ◦ From 2005, 250,000+ hours
  ◦ US, Spain, Russia, China, UK, ...
  ◦ Videos and captions
  ◦ Li, Joo, Steen, Zhu (2017); Joo, Steen, Turner (2018); Steen et al. (2018)
Digitization of Analog Collection

- US TV news and commercials from 60s
Developing Ontology of Political Communication

- Topic
  ◦ Economy
  ◦ Security & defense
  ◦ Education
  ◦ Technology
  ◦ Issues and policies

- People
  ◦ Expressions
  ◦ Demographics

- Sentiments & invoked emotions
Visual Framing of Topics
(Joo, Li, Steen & Zhu, 2014)
Measuring Protest with Images

- Protest
  - Another form of political communication against state, person, event, issues or social beliefs.
  - Publicized in mass/social media, gain support from the public
Measuring Protest with Images

- What can we tell about protests from images?
  - Track protest activities: location, time, size of protest
  - Peaceful vs. Violent protest

![Map of the United States with protest locations]  

![Graph showing protester demographics comparison between Women’s March and Black Lives Matter]
UCLA Protest Image Dataset

- 40k images of protest events
- Annotations of scene attributes and perceived violence

“Protest Activity Detection and Perceived Violence Estimation from Social Media Images.”
Won, Steinert-Threlkeld, Joo (2017)
Model

- ResNet-50
- Multitask learning for attribute classification and violence estimate
- Trained with 40k labeled images
- The model and data are publicly available.
Model

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<th>Fields</th>
<th>Protest</th>
<th>Sign</th>
<th>Photo</th>
<th>Fire</th>
<th>Law enf</th>
<th>Children</th>
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<tbody>
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<td>Pos. rate</td>
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<td>.829</td>
<td>.036</td>
<td>.057</td>
<td>.067</td>
<td>.030</td>
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<tr>
<td>AUC</td>
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<td>.919</td>
<td>.738</td>
<td>.984</td>
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<td>.813</td>
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<tr>
<td>Pos. rate</td>
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<td>-</td>
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<td>.837</td>
<td>.854</td>
<td>.928</td>
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ROC Curve (Protest)

Violent

corr = 0.900
R² = 0.809
### Mapping between Attributes and Emotions

<table>
<thead>
<tr>
<th></th>
<th>Sign</th>
<th>Photo</th>
<th>Fire</th>
<th>Law enf.</th>
<th>Grp &gt; 100</th>
<th>Night</th>
<th>Shout</th>
<th>Male</th>
<th>White</th>
<th>Black</th>
<th>Smile</th>
<th>Frown</th>
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<td>-0.047</td>
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<td>0.189</td>
<td>-0.151</td>
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<td>Angry</td>
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<td>0.417</td>
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<td>-0.143</td>
<td>0.229</td>
<td>-0.237</td>
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Data

- Geolocated tweets from Twitter streaming API
  ◦ Find all images from 14 protest waves since 08.26.2013.
  ◦ Find all protest images from these 14.
  ◦ Classify attributes and measure perceived violence
  ◦ Aggregate to country-day.
Event Analysis
Future Work

- What are the impacts of visuals in protest?
Future Work

- Decoding symbols of protest
Conclusions

- Media affect public opinion and policy

- Computer vision as a tool to understand the impacts of political communication

- RQ in AI/CV/ML: Reasoning high level meaning construction and learning from social knowledge
Collaborators

Donghyeon Won
Zachary Steinert-Threlkeld
Francis Steen
Tim Groeling
THANKS!