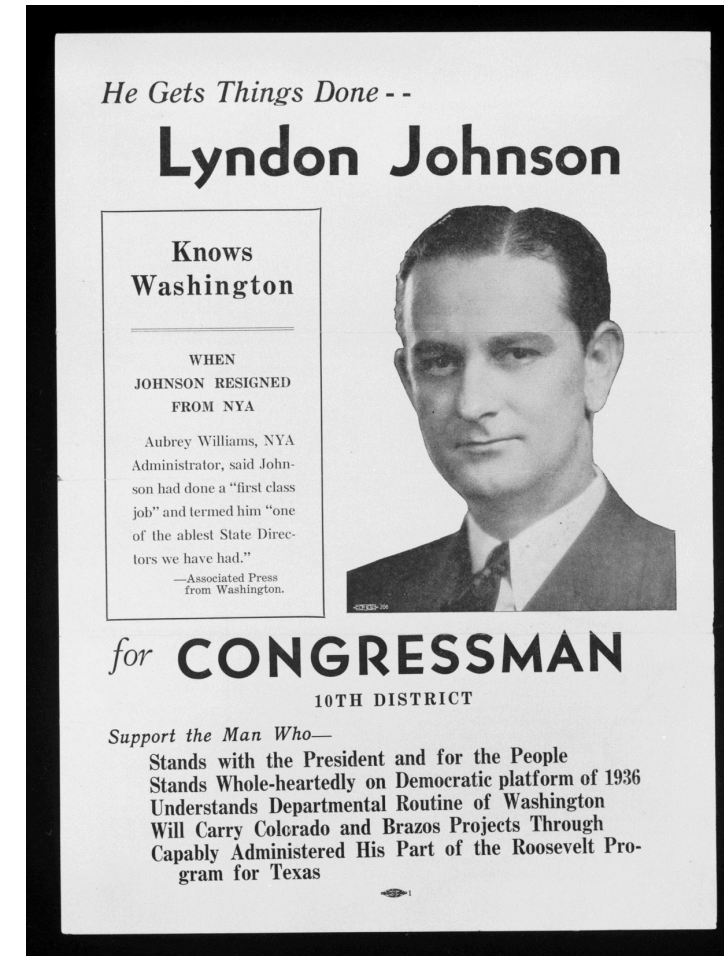# Photographic home styles in Congress: a computer vision approach

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Lyndon Johnson in Congress: Anti-Civil Rights Crusader

o LBJ spent 24 years in Congress.

o 12 years in the House, 12 years in the Senate

o Voted against every pro-civil rights bill.

He Gets Things Done - -
Lyndon Johnson

Knows Washington

WHEN JOHNSON RESIGNED FROM NYA

Aubrey Williams, NYA Administrator, said Johnson had done a "first class job" and termed him "one of the ablest State Directors we have had."
—Associated Press from Washington.

for **CONGRESSMAN**
10TH DISTRICT

Support the Man Who—
Stands with the President and for the People
Stands Whole-heartedly on Democratic platform of 1936
Understands Departmental Routine of Washington
Will Carry Colorado and Brazos Projects Through
Capably Administered His Part of the Roosevelt Program for Texas

President Lyndon Johnson: Civil Rights Hero

o After signing the Civil Rights Act of 1964, soon becomes known as a civil rights hero.

o Due in no small part to ability to manipulate how he was perceived by the public.

Source: Lyndon Baines Johnson Library and Museum. Photo by Yoichi Okamoto.

President Lyndon Johnson: Civil Rights Hero

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o Due in no small part to ability to manipulate how he was perceived by the public.

Source: PBS. Photo by Yoichi Okamoto.

Yoichi Okamoto - White House Photographer Under LBJ 1963-1969

o Hired Yoichi Okamoto, the first "White House photographer".

o Known as the "godfather" of White House photography.

Source: New York Times. Photo by Yoichi Okamoto.

Okamoto's Juxtapositions

o Okamoto a master of "juxtaposition."

o Worked tirelessly to shape how LBJ was perceived through his photographs.

In June 1963, Mays and then-Vice President Lyndon Johnson confer while en route to the state funeral of Pope John XIII.
Photo by Yoichi Okamoto. Source: LBJ Presidential Library

Okamoto's Juxtapositions

o Okamoto a master of "juxtaposition."

o Worked tirelessly to shape how LBJ was perceived through his photographs.

At the signing of the Voting Rights Act in the Capitol Rotunda, President Lyndon Johnson moves to shake hands with the Rev. Martin Luther King, right. (Yoichi R. Okamoto/LBJ Library)

Juxtapositions

o Juxtapositions with symbols, objects and people.

o Common technique used by photographers to create visual metaphors and influence opinion.

Source: Associated Press

Juxtapositions

o Juxtapositions with symbols, objects and people.

o Common technique used by photographers to create visual metaphors and influence opinion.

Paul Ryan speaking to military personnel. Source https://www.facebook.com/paulryanwi/

Photographic home styles in Congress

Juxtapositions and Image Analysis

o Little evidence that juxtapositions or other techniques used by photographers have psychological/political effects.

Few large scale image analysis projects…

o Computational limitations have prevented large scale analyses of images and image features.

New computer vision/machine learning techniques now make this possible...

o Backpropagation, stochastic gradient descent and other fast optimization techniques.

o Massively parallel GPU computing.

o Availability of image data for training.

o **Convolutional neural networks** make large-scale image feature classification possible.
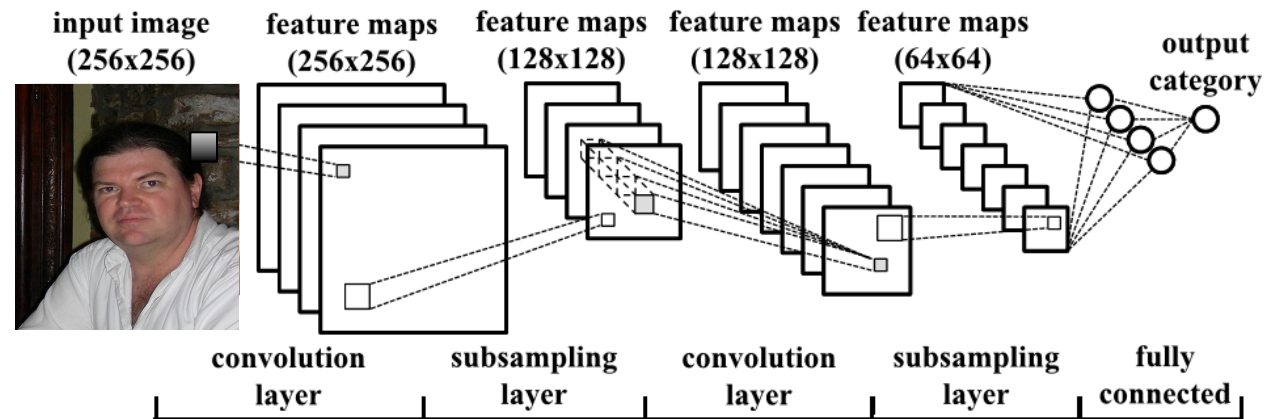
Developing an empirical basis for the study of political images more important now than ever...

o Image saturated political landscape.

o Daily communication between politicians and constituents through photos common.
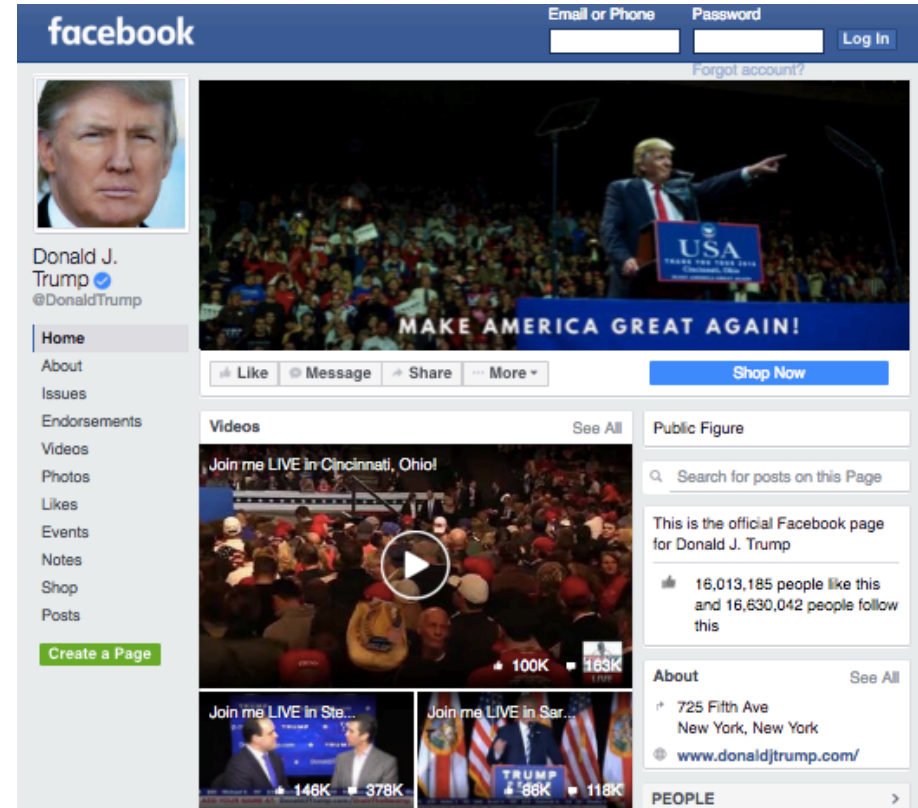
President-elect Donald J. Trump's Facebook profile.

Study goals

o Develop a framework for understanding how **politicians** communicate with **constituents** through images.

o Demonstrate that image features identified as part of our theory causally affect how politicians are perceived.

o Apply the framework to an analysis of the use of images by members of the U.S. House and Senate on Facebook.

A framework for political image analysis

o Democratically elected politicians behavior can be understood by their desire to get re-elected. (Mayhew 1974)

o Major goal of political image analysis is then understanding *how* politicians use images to further their re-election goals or advance careers.

o Fenno's (1978) theory of "home style" provides guidance.

A framework for political image analysis: fundamentals

Three major politically relevant features of images.

①**Objects.**
②**People.**
③**Poses.**

Objects

o Objects and symbols contain political meaning when juxtaposed with a political figure or by themselves.

o Tend to contain abstract information about the personal qualities of politicians and/or their policy positions.
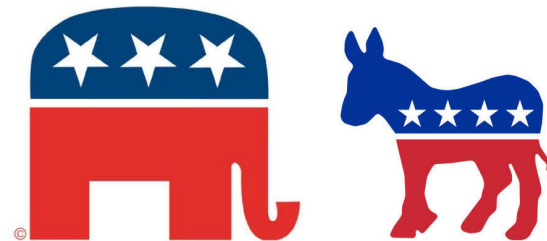
Symbols of the Republican and Democratic parties.

Objects

o Objects and symbols contain political meaning when juxtaposed with a political figure or by themselves.

o Tend to contain abstract information about the personal qualities of politicians and/or their policy positions.

Former Texas Governor Rick Perry posing with rifles in a gun shop. Source http://www.politico.com/gallery/politicians-with-guns

People

o Politically relevant to the extent that they can convey information to constituents.

o Well known people.

o Unknown people.

New Jersey governor Chris Christie embraces President Obama during his visit to the state after Hurricane Sandy in 2013. *Source: Breitbart*

People

o Politically relevant to the extent that they can convey information to constituents.

o **Well known people –** may be used to signal ideology/bipartisanship.

o Unknown people.

New Jersey governor Chris Christie embraces President Obama during his visit to the state after Hurricane Sandy in 2013. *Source: Breitbart*

People

o Politically relevant to the extent that they can convey information to constituents.

o Well known people.

o **Unknown people –** Visible group qualities (age, race, gender) may signal identification/concern with constituency group.
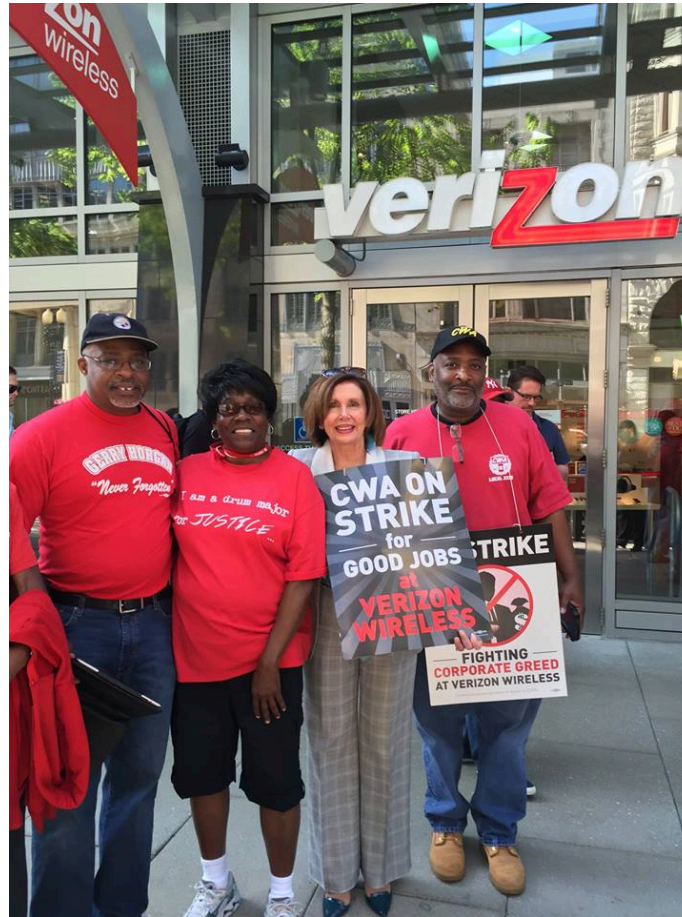
Nancy Pelosi posing next to union members on strike in her district

Poses

o Gestures, facial expressions etc. convey wide ranges of emotions.

Images from Google search of "John Boehner", former Republican House speaker.

Home style (Fenno 1978)

o Fenno's (1978) theory of home style developed through following around several members of Congress over a number of years.

o Gaining and maintaining trust among constituents fundamental to reelection goals.

o Idiosyncratic sets of behaviors developed among members of Congress as they attempted to gain trust among constituents.

Home style (Fenno 1978)

o Main components:

① **Resource allocation** – how she allocates scarce resources.
② **Washington activities** – what she is doing when outside of their district.
③ **Presentation of self** – how she presents herself to constituents.

"Photographic" home style

o Those elements of home style that can be readily communicated through images.

①Washington activities.
②Presentation of self.

Both can be communicated through image features

Washington activities

o Demonstrating they are fighting for constituents in DC.

o Demonstrating they are "different from" other members of Congress.

Just another "average Joe"...

Rep. Doug Collins (R-GA 9, right) posing as a convenience store clerk in his district.

Source: Rep. Collins' Facebook page: https://www.facebook.com/RepresentativeDougCollins/photos/

Photographic home styles in Congress
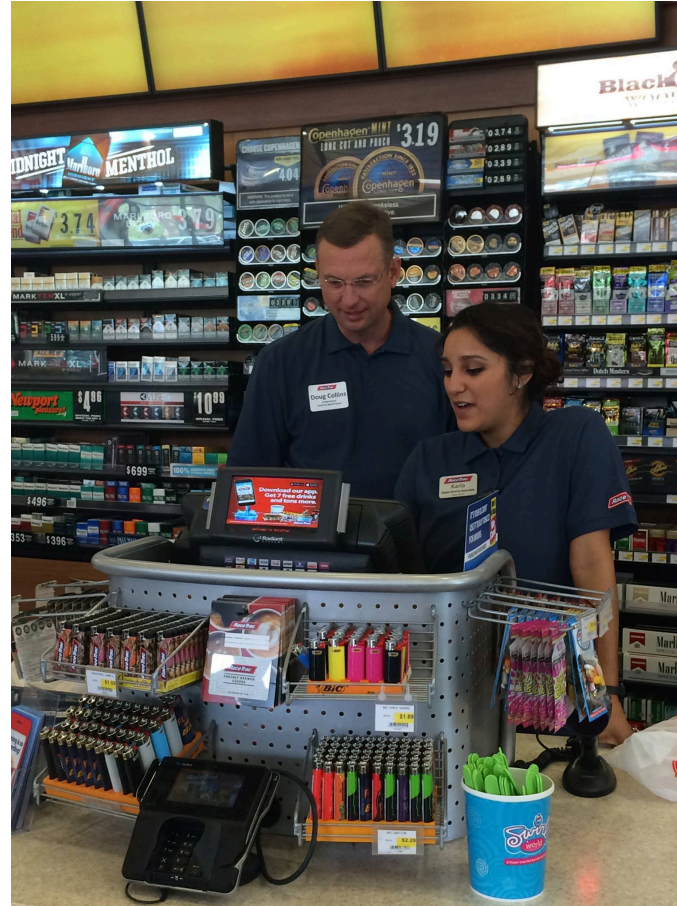
Tirelessly fighting for constituents…

Rep. John Lewis (D-GA 5, left) being arrested for blocking traffic during an immigration rally in Washington DC in 2012.

Presentation of self

- Trust gained through presentation of self involves three elements:

  ① **Qualification** – "I'm qualified for the job."
  ② **Identification** – "I'm one of you."
  ③ **Empathy** – "I feel your pain."

Presentation of self demonstrated through poses, people and objects in photos

Qualification

Rep. Joe Kennedy III (D-MA 4) giving a speech on behalf of the Energy and Commerce Committee.

Source: Joe Kennedy III Facebook page: https://www.facebook.com/CongressmanJoeKennedyIII/

Identification and empathy

House Speaker Paul Ryan Poses with a Vietnam Veteran.

Source: https://www.facebook.com/paulryanwi/.

Photographic home styles in Congress

Identification and empathy

A photo collage posted on Rep. Louise Slaughter's (D-NY 25) Facebook profile.

Source: https://www.facebook.com/RepLouiseSlaughter/

The people you pose with experiment

o Focus on presentation of self.

o Do group qualities (gender and race) causally affect how politicians are perceived?

o Focus on Rep. Lou Barletta (R, PA-11).

Image treatments

Alone
Man
Woman
Af. American

Questions related to home style

1,100 respondents recruited through Amazon MTurk

"What is your best guess of the political party that this politician belongs to?"

Beliefs about Barletta's party ID vary significantly by image shown.

Woman: **44%** guessed Democrat
54% guessed Republican

Man: **36%** guessed Democrat
64% guessed Republican
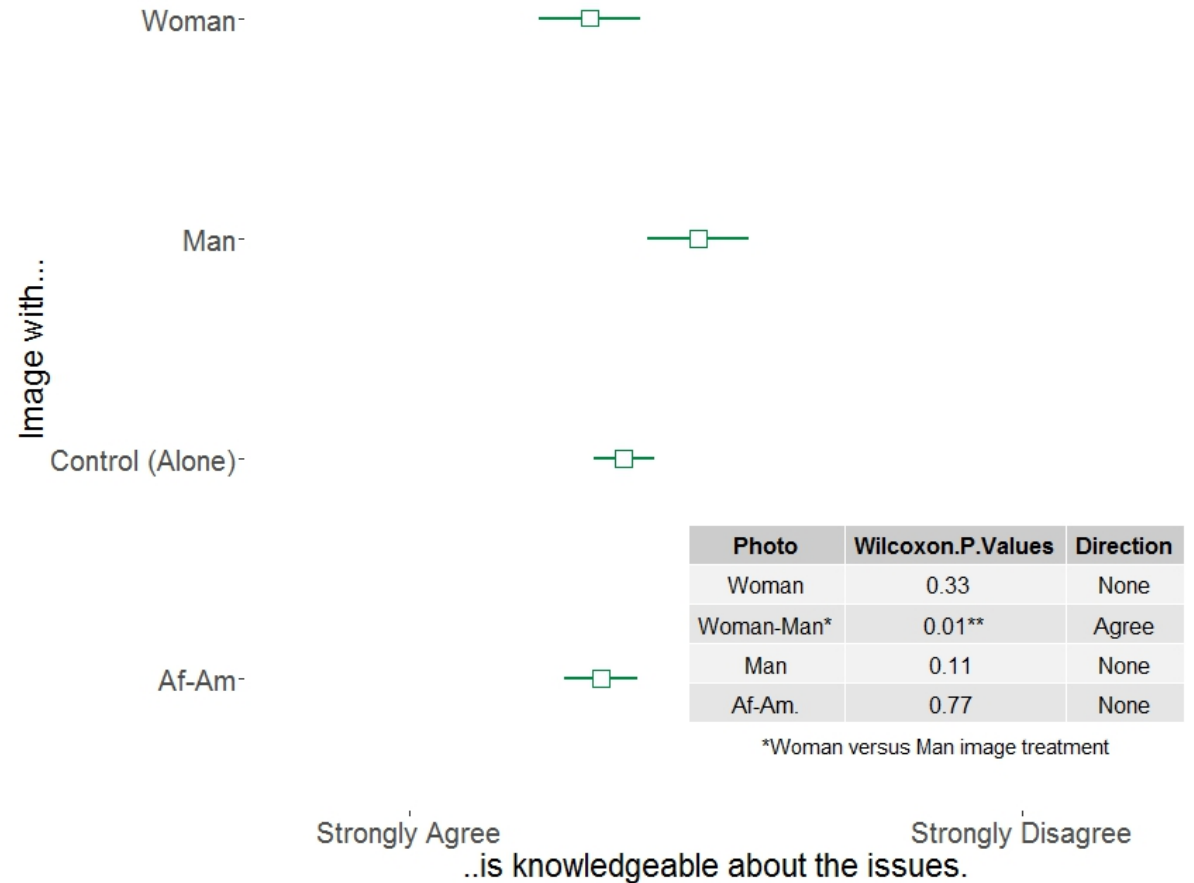
Alone: **42%** guessed Democrat
58% guessed Republican

Af. Am: **62%** guessed Democrat
38% guessed Republican
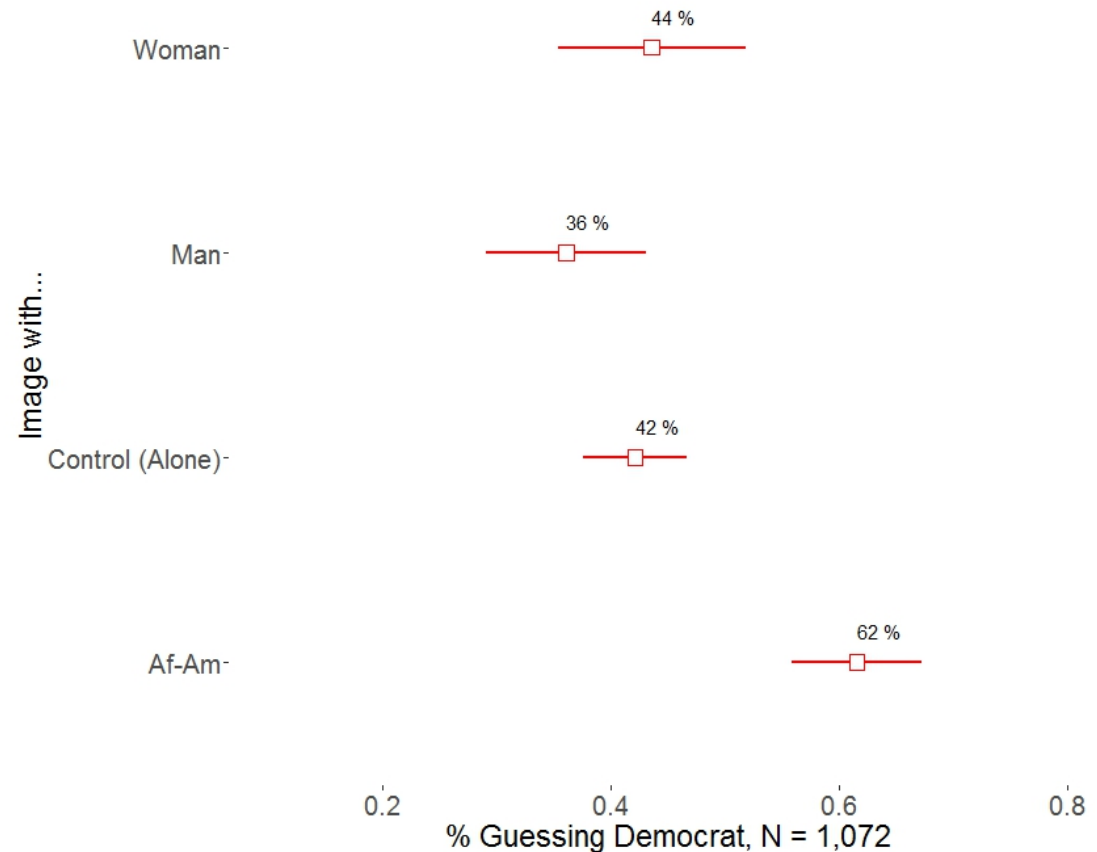
"Does this politician seem...honest and trustworthy?"

Perceived to be **more trustworthy** when pictured next to a woman.

Photo	Wilcoxon.P.Values	Direction
Woman	0.03**	Agree
Woman-Man*	0.01**	Agree
Man	0.62	None
Af-Am.	0.53	None
	*Woman vs. Man Image Treatment	
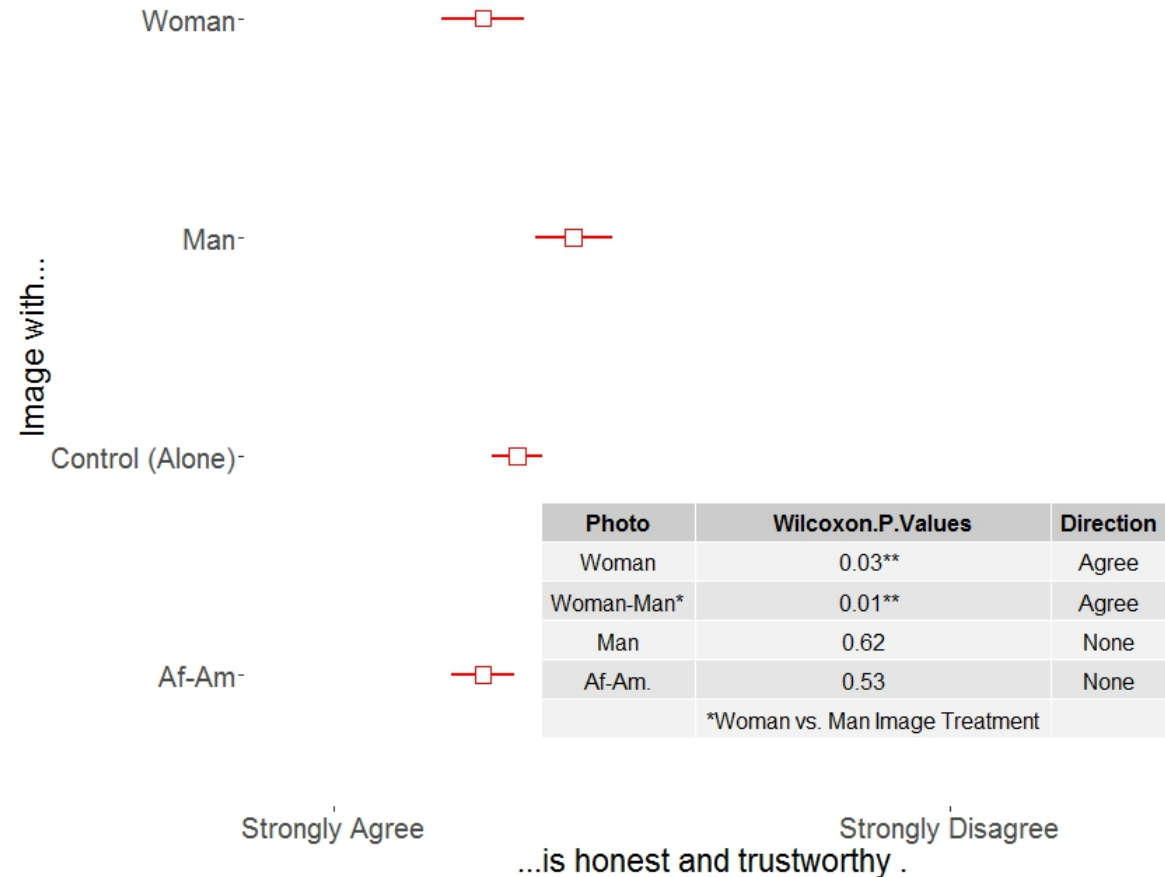
"Does the politician seem…knowledgeable about the issues?"

Perceived to be *less knowledgeable* when pictured next to an older, white man.

Photo	Wilcoxon.P.Values	Direction
Woman	0.33	None
Woman-Man*	0.01**	Agree
Man	0.11	None
Af-Am.	0.77	None

*Woman versus Man image treatment

"Does the politician seem...like someone who shares my values? (non-white respondents)"

Perceived by **non-white respondents to share their values** when pictured next to African-American men.

Photo	Wilcoxon.P.Values	Direction
Woman	0.44	None
Man	0.23	None
Af-Am	0.01**	Agree
Note: Results versus Control.		
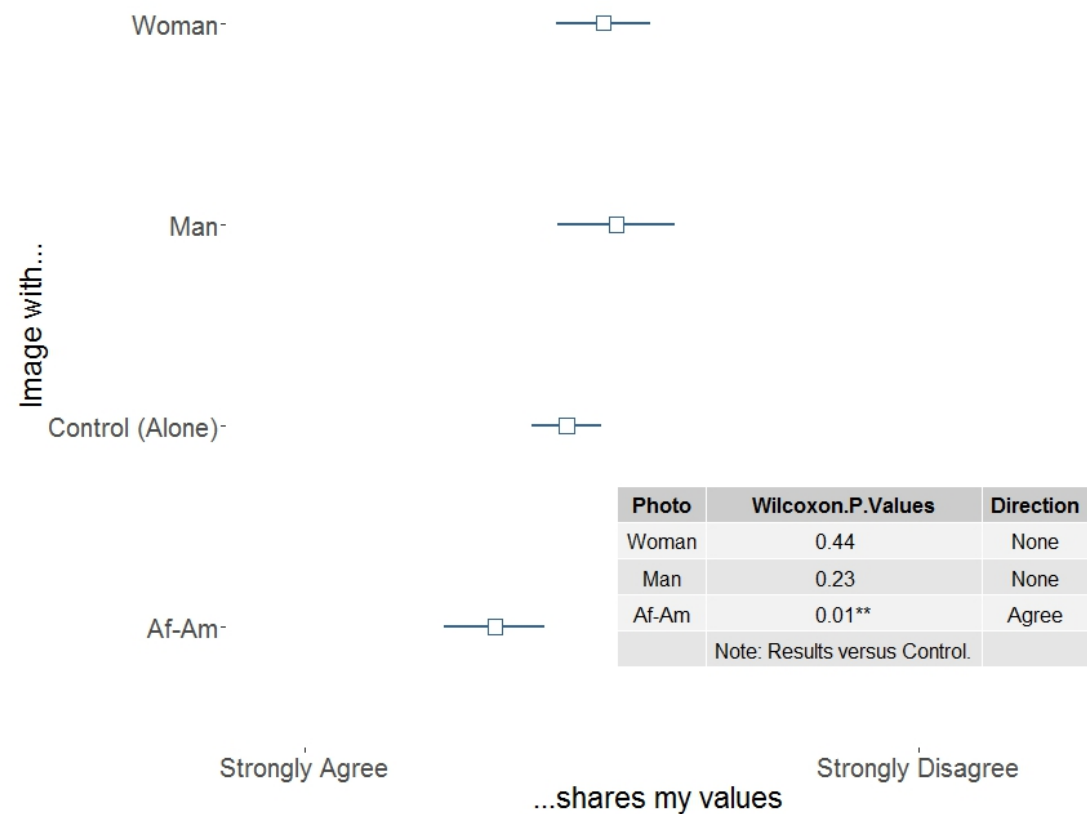
Exploring photographic home styles with convolutional neural networks

o Do members of the House and Senate use the race of people that they pose with strategically? i.e. to manipulate their presentation of self?

Hypotheses

H1: *Republican members of Congress do not rely on votes from minority constituents and thus will not strategically use race in the photos they post.*

H2: *Democrats rely heavily on votes from minority groups and thus will strategically use race in the photos they post.*

H3: *As a consequence of **H1** and **H2**, we expect to find a strong relationship between Congressional district or state demographics and the racial composition of Facebook photos among Democrats in Congress and not Republicans.*

Methods

o Collect photos from the Facebook profiles of members of Congress.

o Train a convolutional neural network race classifier to identify the race of individuals in photographs.

o Compare Facebook profile "demographics" with district or state demographics.

Data

~192,000 Facebook images with text posts for accounts of:

230 **US House members.**

53 **US Senate members.**

Photographic home styles in Congress

Convolutional neural network: building a race classifier

o 16-layer convolutional neural network ("VGG", Simonyan and Zisserman, 2014).

o Fine tuned using 17,500 PubFig (Kumar et al. 2009) training images with the following annotations as ground truth: African-American, white, hispanic and asian.

o 44,000 annotated portraits of American high school seniors also included in training set (Ginosar et al. 2015).

Convolutional neural network: building a race classifier

o Faces in Facebook images identified with haarcascades, cropped to match training set.
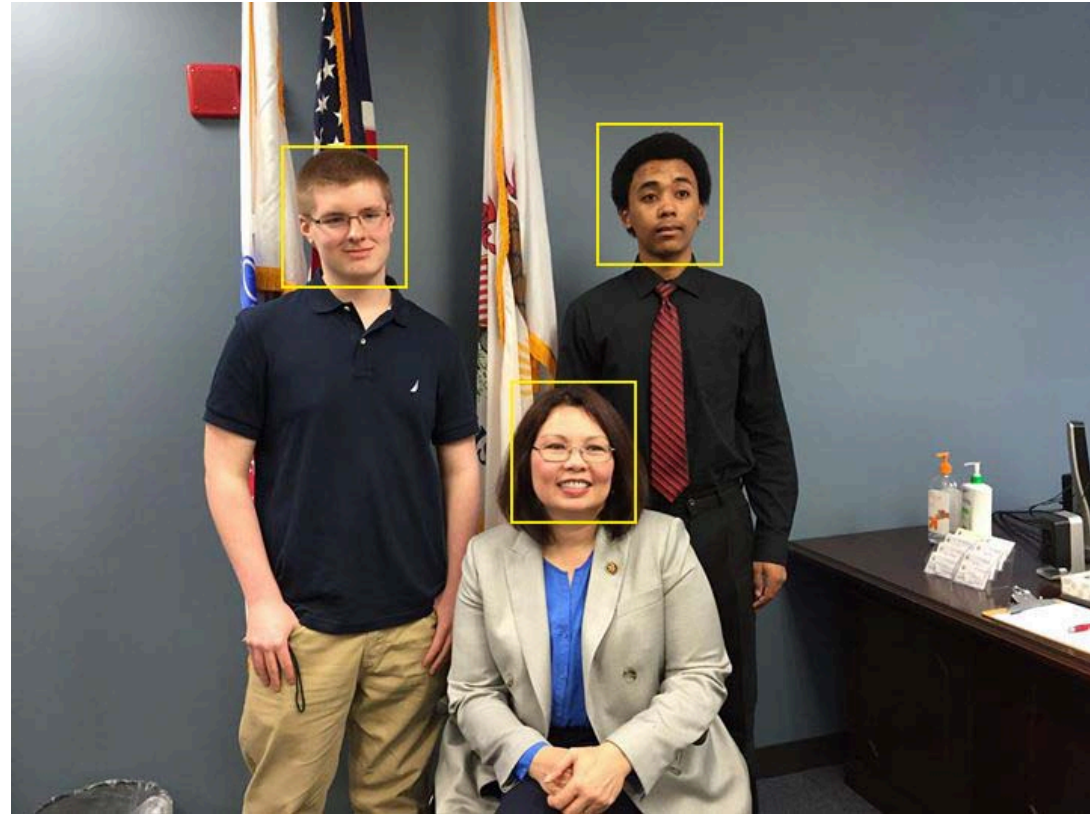
A Facebook photo from Representative Tammy Duckworth's (D-IL) profile.

Photographic home styles in Congress

Convolutional neural network: building a race classifier

- 16-layer VGG CNN trained on original 61,000 annotated images.

- 17,000 Facebook images used for validation.

- Classifier fine-tuned over 100,000 iterations.
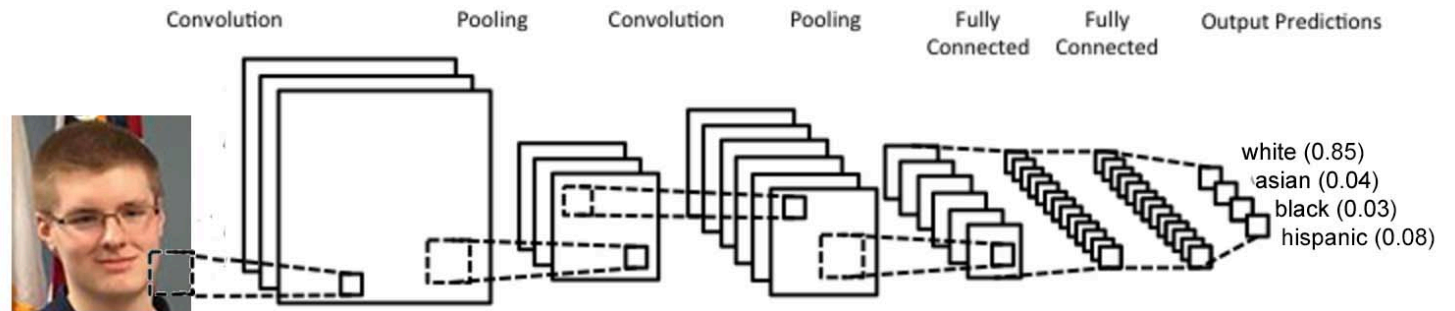
Representation of a convolutional neural network race classifier.

Convolutional neural network: building a race classifier

o Accuracy improved by manual verification of high confidence classifications and adding them to the training data.
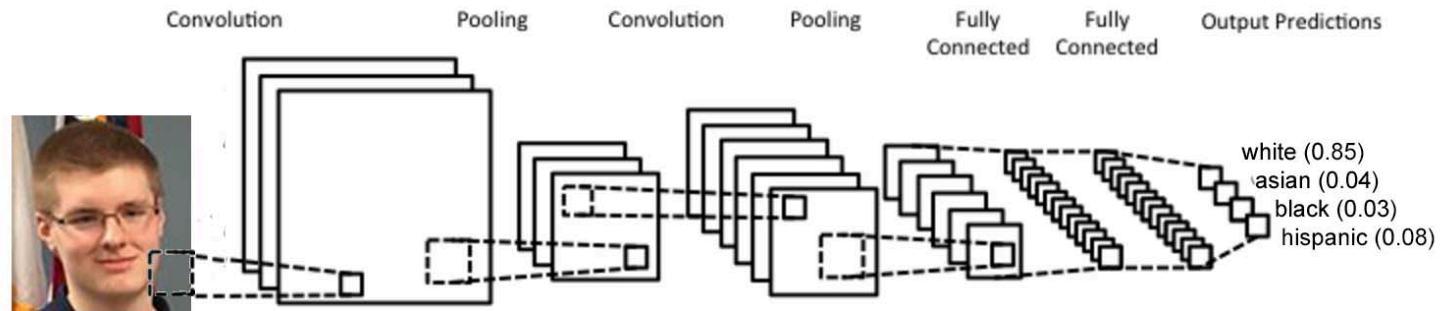
Representation of a convolutional neural network race classifier.

Convolutional neural network: building a race classifier

o Augmented dataset trained over 20,000 iterations.

o Avg. cross-validated accuracy rates of **90%** fo whites, **85%** for African-American, **75%** for Asian, **65%** for Hispanic.
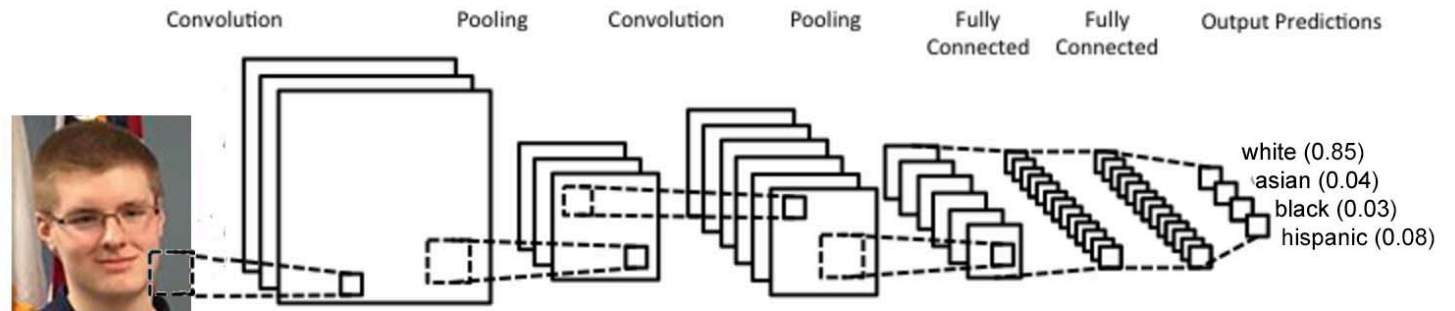
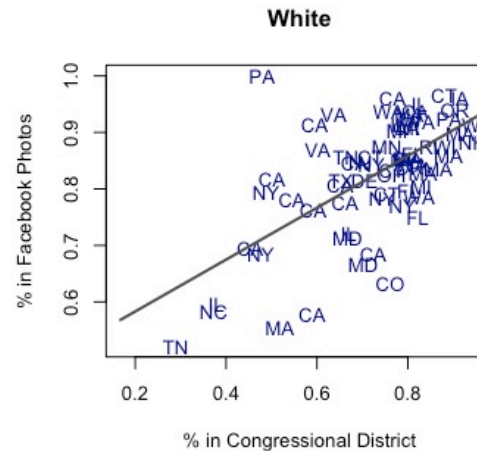Representation of a convolutional neural network race classifier.

Results: white House and Senate members
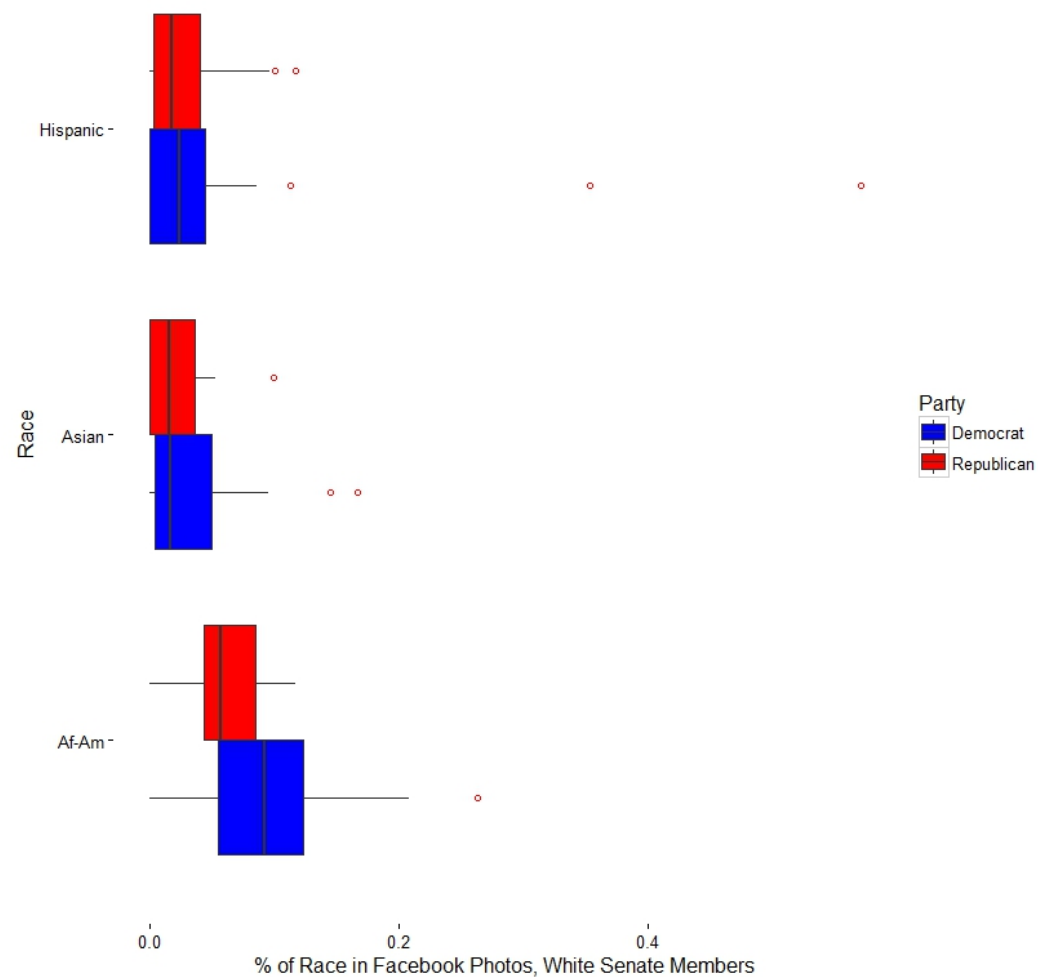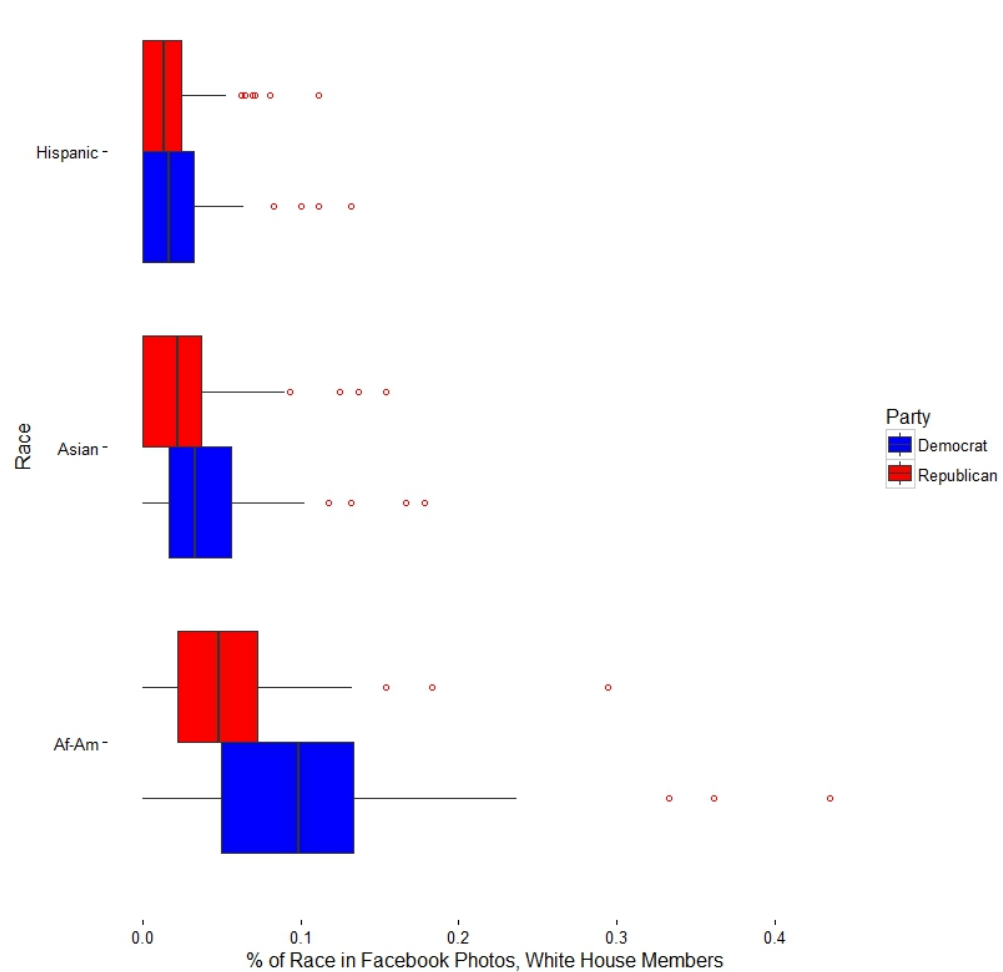
House: district v. Facebook racial demographics, white members.

Democratic MCs (blue)
Republican MCs (red)

Photographic home styles in Congress
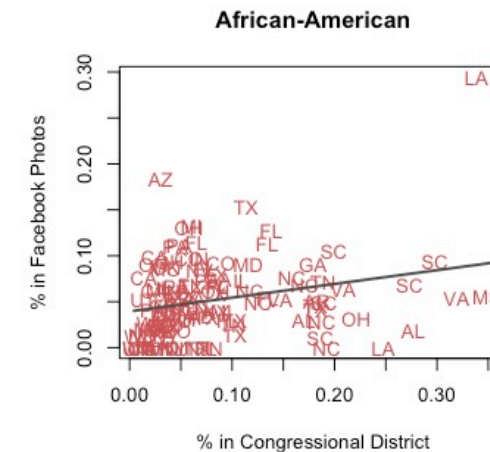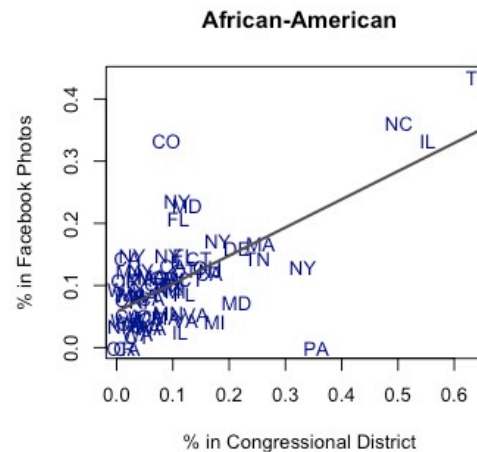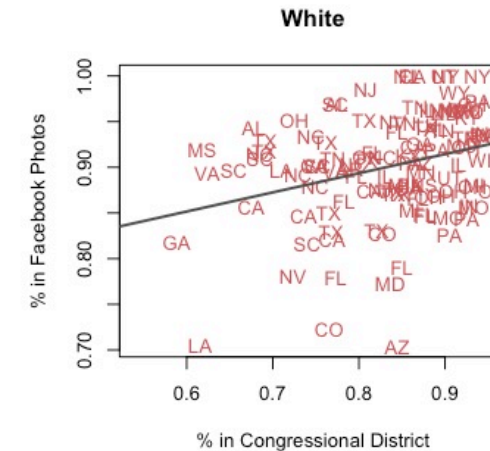
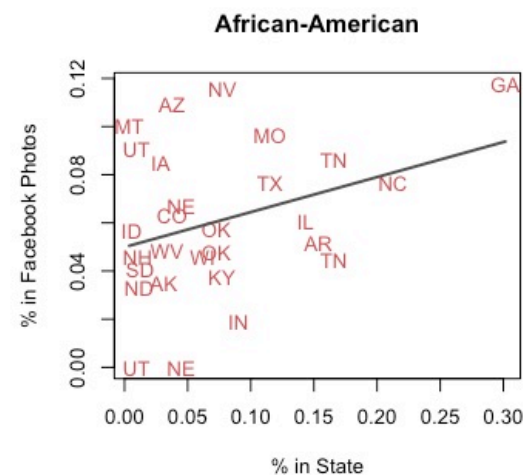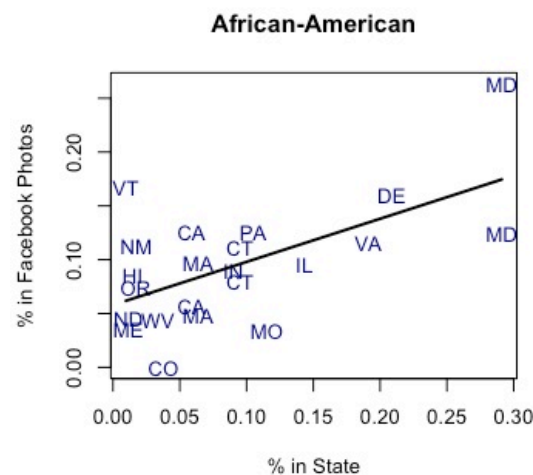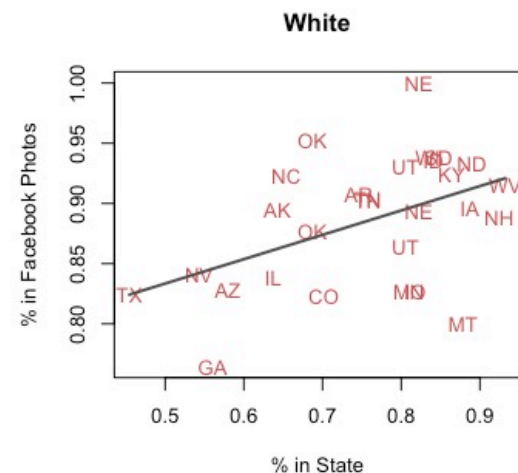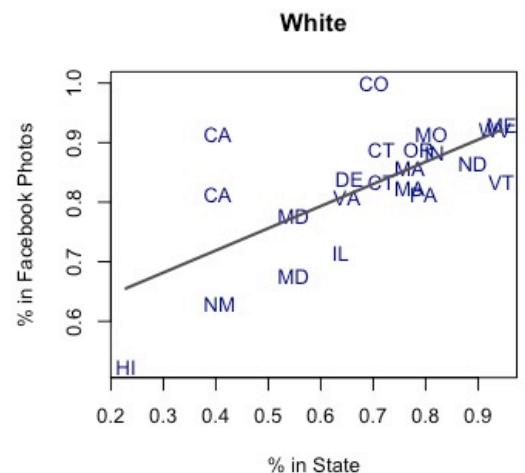# House: district v. Facebook racial demographics, white members

Differences hold when state fixed effects are included.
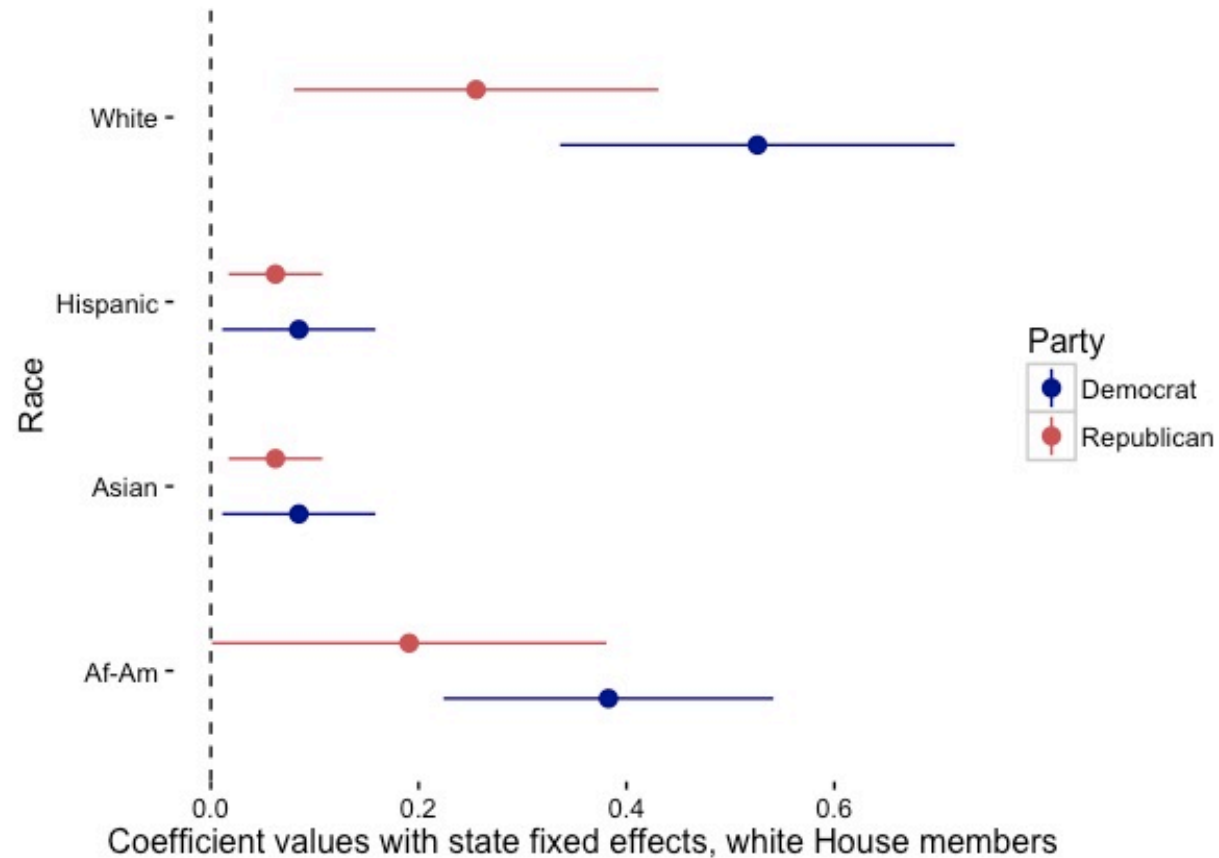
Similar patterns in the Senate…

Democratic MCs (blue)
Republican MCs (red)

State demographics v.
Facebook profile
demographics.

Photographic home styles in Congress

Questions?

Framework for understanding how politicians communicate with constituents through images.

- o **Mayhew (1974)** "The Electoral Connection" – politician's behavior can be understood by re-election motivations.

- o **Fenno (1978)** "Home Style: House Members in their Districts" – idiosyncratic means of gaining trust (and advancing re-election goals) among constituents.

Demonstrate that image features identified causally affect how politicians are perceived

o Image manipulation experiment with Rep. Lou Barletta (R, PA-11)

o Assesses how people politicians pose with affects **trustworthiness**, **identification**, **empathy** and **competence**.
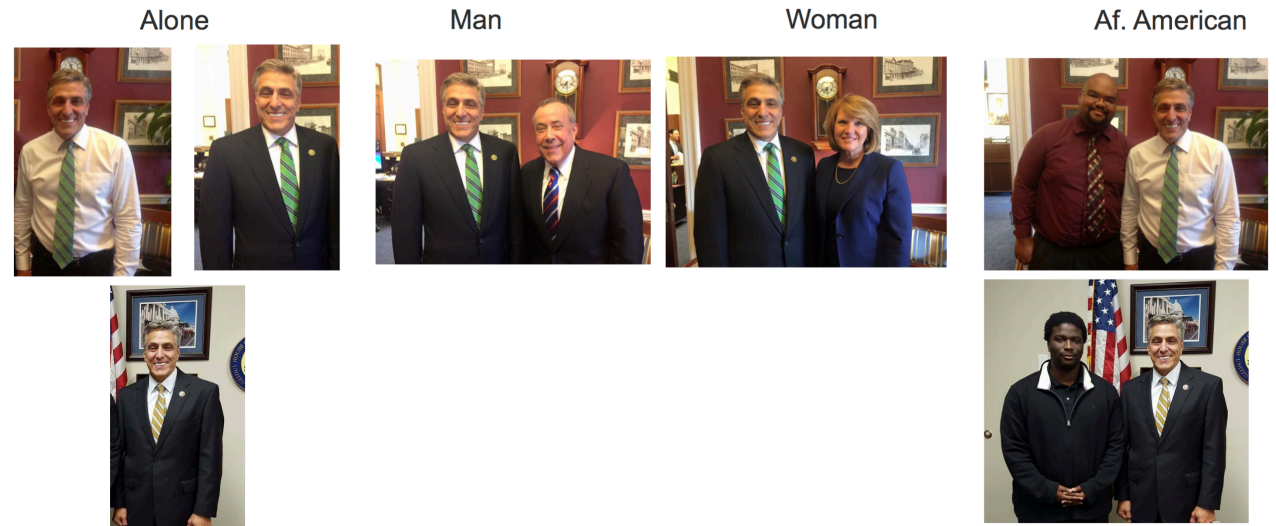
Analysis of image use by members of the U.S. House and Senate on Facebook.

o ~192,000 Facebook images of 230 House members and 52 Senate members.

o Train 16-layer convolutional neural network race classifier.

o Explore use of race by Democrats and Republicans in Congress