Do Diverse Social Interactions Make Us Smile More Often?

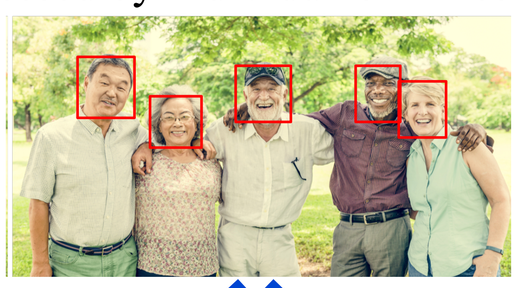
Studying Smiles and Diversity Via Social Media Photos

Vivek K. Singh[1], Akanksha Atrey[2], Saket Hegde[1]

Rutgers University[1], UMass Amherst[2]

Motivation

- Photographs → one of the most fundamental ways for human beings to capture social experiences.
  - Provide unique opportunity to study the social phenomena of mixing of different people and the smiles expressed by individuals in these social settings.



- Advancing the understanding of phenomena of smiles and diversity of social interactions
  - Scale to millions of individuals, not require human time, and capture the temporal dynamics

Objectives

RQ1: How can the visual content on social media (photos) be used to study the interconnections between diversity and smiles?

RQ2: What are the effects of presence of others on the smile levels of the individuals in photos?

RQ3: What are the effects of diversity of social interactions in terms of age, race, and gender on the smile levels of individuals in photos?

Novelty

What has been done:

- Understanding diversity in terms of social interactions, not residential address
- Using smile scores to judge emotion

What has not been done: Computationally (scale, automation) studying the effects of diversity on smiles.

Approach

- Collect Instagram images via Instagram's public API
- Collect Twitter images via Twitter's Stream API
- Recognize & remove non-facial and tourist images

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- Obtain variables from Face++ API of all individuals
- Validate race detection using Morph dataset
- Validate smile scores using human annotation comparison

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- Obtain the number of face in each image
- Compute smile scores (dep. variable) of each image
- Compute interaction diversity metric (SEAge, SEGender, SERace) for all images

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- T-test between smile scores for photos with single and multiple people
- OLS Linear Regression model for smile score as a function of demographic (control) variables and diversity

Results

- **T-test** between smile scores for photos with single and multiple people
  - Results across the two data sets consistently suggest that people tend to smile more in the presence of others.

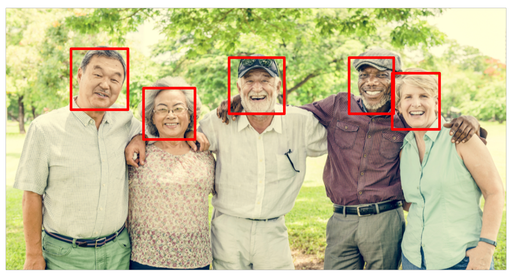
	Groups	N	Mean	Std. Dev	Std. Error	Model Significance (p-value)	T-test between the two groups
Instagram	Multiple	3157	**52.80**	28.83	0.51	<0.001	**T = 26.06**
	Single	4035	**33.75**	33.09	0.52	<0.001	
Twitter	Multiple	3688	**53.70**	27.04	0.45	<0.001	**T = 31.34**
	Single	4380	**33.07**	32.10	0.49	<0.001	

- **Linear regression** for smile score as a function of demographic (control) variables and diversity variables
  - Results indicate that people smile MORE in DIVERSE social company
  - POSITIVE coefficients observed for MIXING
  - Broad level consistencies between the datasets

Approach Overview

Original Photo

Face++ API Facial & Attributes Detection of Photo



Gender: Male Age: >35 Ethnicity: Asian Smile Score: 41.17

Gender: Female Age: >35 Ethnicity: Asian Smile Score: 96.41

Gender: Male Age: >35 Ethnicity: White Smile Score: 89.02

Gender: Male Age: >35 Ethnicity: Black Smile Score: 88.68

Gender: Female Age: >35 Ethnicity: White Smile Score: 92.07

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Our Interpretation of Results

Variable	Value
# of Males	3
# of Females	2
# of Whites	2
# of Blacks	1
# of Asians	2
<18 Age	0
>18 and <35 Age	0
>35 Age	5
Avg. Smile Score	81.47

Limitations

- Posed and shared smiles
- Limited demographic descriptors
- Modest effect sizes

Implications

- Supports experiments in multiple social sciences
  - Scalable, automated, lower cost, "in-the-wild"
- Contextual understanding for modeling faces and their dynamics in multimedia systems
- Building blocks to a more smiling, happier society.