



| Instagram

...

Zhuoer(Edillower) Wang
Chuhan Feng

Introduction

- Market
- Feature & User Interface
- Developer API
- Academic Research



| Instagram

Market



| Instagram

Market

- A free mobile app launched in Oct 2010
- Photo sharing and Short video sharing
- Goal: Facilitating communication through images
- Founders: Kevin Systrom & Mike Krieger
- Acquired by Facebook in Apr 2012 for \$1 billion
- Currently over 500 million active users



| Instagram

Feature & User Interface



| Instagram

Evolution of Features

- Oct 2010: Instagram launched
 - Photos confined to a square shape
 - Comments, likes, geotagging
- Jan 2011: Add hashtags
- Sep 2011: Version 2.0 introduce live filters
- May 2013: Introduce photo tagging
- Jun 2013: Video sharing launched
 - 640 by 640 fixed resolution
 - 15 seconds limit



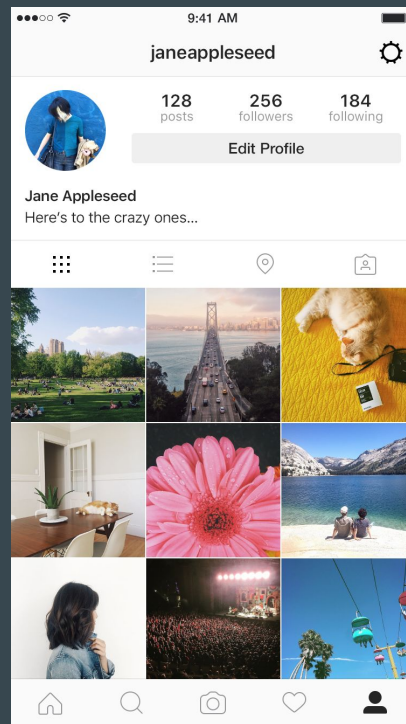
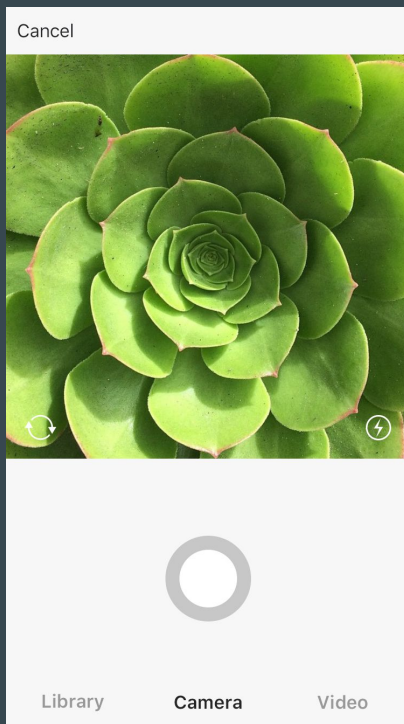
| Instagram

Evolution of Features (Cont.)

- Dec 2013: Introduce Direct
- Aug 2015: Remove restriction
 - Photos of any aspect ratio
 - Videos up to 1080p and 60 seconds long
- Oct 2015: Boomerang launched
 - Take 5 burst in one second, combine into a live photo
- Jun 2016: Announce instant translation feature



| Instagram



User Interface

API



| Instagram

HTTP based API

- No python wrapper like Twitter
- Sample Request (HTTPS)

```
curl -F 'client_id=CLIENT_ID' \  
      -F 'client_secret=CLIENT_SECRET' \  
      -F 'grant_type=authorization_code' \  
      -F 'redirect_uri=AUTHORIZATION_REDIRECT_URI' \  
      -F 'code=CODE' \  
      https://api.instagram.com/oauth/access_token
```

- Sample Response (JSON)

```
{  
  "access_token": "fb2e77d.47a0479900504cb3ab4a1f626d174d2d",  
  "user": {  
    "id": "1574083",  
    "username": "snoopdogg",  
    "full_name": "Snoop Dogg",  
    "profile_picture": "..."  
  }  
}
```



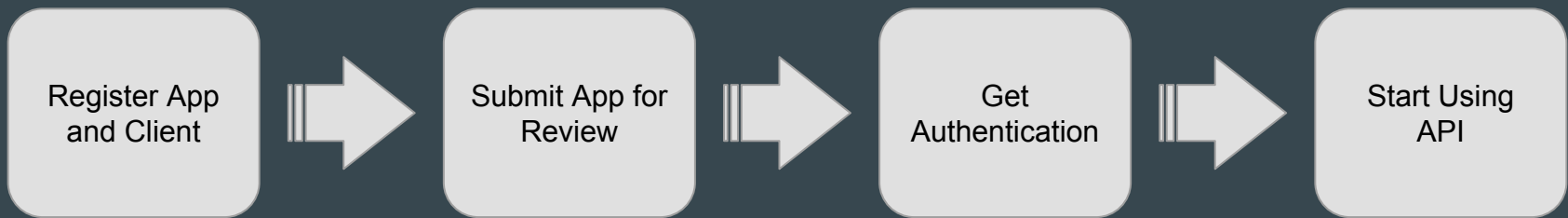
Instagram

Sandbox Mechanism

- All apps are initially in Sandbox mode
- In Sandbox mode
 - API still working
 - No public data access
 - Only access to invited Sandbox user
 - Up to 10 Sandbox users can be invited to test the app
- To jump out of the Sandbox (Go Live)
 - Need to submit the app for review
 - Wait for approval
- In Live mode
 - Public data access with a rate limit of 5000 / hour



| Instagram

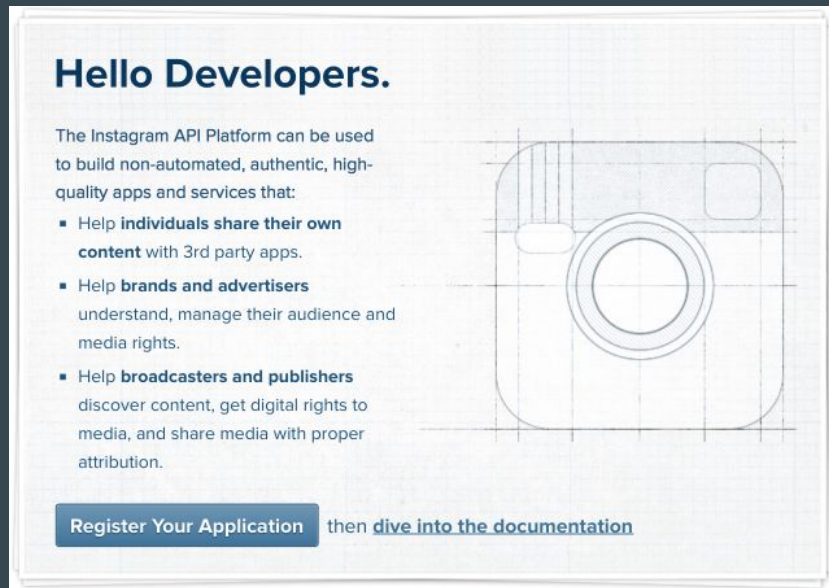


The Workflow



| Instagram

Register



- Very straightforward
- Follow the steps and fill out all information required
- After registering application, register a client for the application
- Client ID and Client Secret can be obtained after finishing the registration



Instagram

ChuhanFengAPIDemo

[DELETE](#)[MANAGE](#)

CLIENT INFO

CLIENT ID	1cf257e09ebb439995b293fd7c5227c6
SUPPORT EMAIL	feng.337@osu.edu
CLIENT STATUS	Sandbox Mode

A demo for instagram API

Register



Instagram

Submit for Review

- All clients registered are under Sandbox mode
- To Go Live, fill out all the information required

Application Name:	<input type="text" value="ChuhanFengAPIDemo"/>
<i>Do not use Instagram, IG, insta or gram in your app name. Make sure to adhere to the API Terms of Use and Brand Guidelines .</i>	
Description:	<input type="text" value="A demo for instagram API"/>
Company Name:	<input type="text" value="Ohio State University"/>
Website URL:	<input type="text" value="http://cse.osu.edu"/>
Privacy Policy URL:	<input type="text"/>
Contact email:	<input type="text" value="feng.337@osu.edu"/>
<i>An email that Instagram can use to get in touch with you. Please specify a valid email address to be notified of important information about your app.</i>	



Instagram

Submit for Review (Cont.)

- Then click start a submission
- Wait for approval

Company Name, Contact Email and Privacy Policy URL are required to start a submission.

All permissions require approval to be used out of Sandbox. Make sure to review our Platform Policies before submitting your app for review. To learn more about the review process, please read the Permissions Review documentation.

Permission	Review Status
basic	N/A
comments	N/A
follower_list	N/A
likes	N/A
public_content	N/A
relationships	N/A

Start a submission



Instagram

Authentication

- A little more tricky than Twitter
- An `access_token` is required to access any API endpoint
- Two ways to get the `access_token`
 - Server-side flow
 - More secure, more steps, more tricky, require server
 - Used to build more complicated consumer apps
 - Client-side flow
 - Quick and easy access, no need for server, but less secure
 - Suffice for conducting research



Authenticate with Client-side Flow

- Step 1:
 - Direct the user to Instagram authorization URL
 - Request format:
`https://api.instagram.com/oauth/authorize/?client_id=CLIENT-ID&redirect_uri=REDIRECT-URI&response_type=token`
 - Parameters for Demo:
`CLIENT-ID = 1cf257e09ebb439995b293fd7c5227c6`
`REDIRECT-URI = http://cse.osu.edu`
- Step 2:
 - User login
- Step 3:
 - Receive the access_token via the URL fragment
 - Format of redirecting URL received:
`http://REDIRECT-URI#access_token=ACCESS-TOKEN`
 - Token Received
`ACCESS-TOKEN = ?`



Instagram

Endpoints Available

- Once an `access_token` is acquired, we can start making requests on several endpoints
- List of Endpoints
 - Users
 - Relationships
 - Media
 - Comments
 - Likes
 - Tags
 - Locations



Instagram

User Endpoints

GET	/users/self	... Get information about the owner of the access token.
GET	/users/ <code>user-id</code>	... Get information about a user.
GET	/users/self/media/recent	... Get the most recent media of the user.
GET	/users/ <code>user-id</code> /media/recent	... Get the most recent media of a user.
GET	/users/self/media/liked	... Get the recent media liked by the user.
GET	/users/search	... Search for a user by name.



Instagram

Demo

- Get user information

https://api.instagram.com/v1/users/user-id/?access_token=ACCESS-TOKEN

- Get recent media of user

https://api.instagram.com/v1/users/user-id/media/recent/?access_token=ACCESS-TOKEN

- User ID for Demo

User-id = 348186280



Instagram

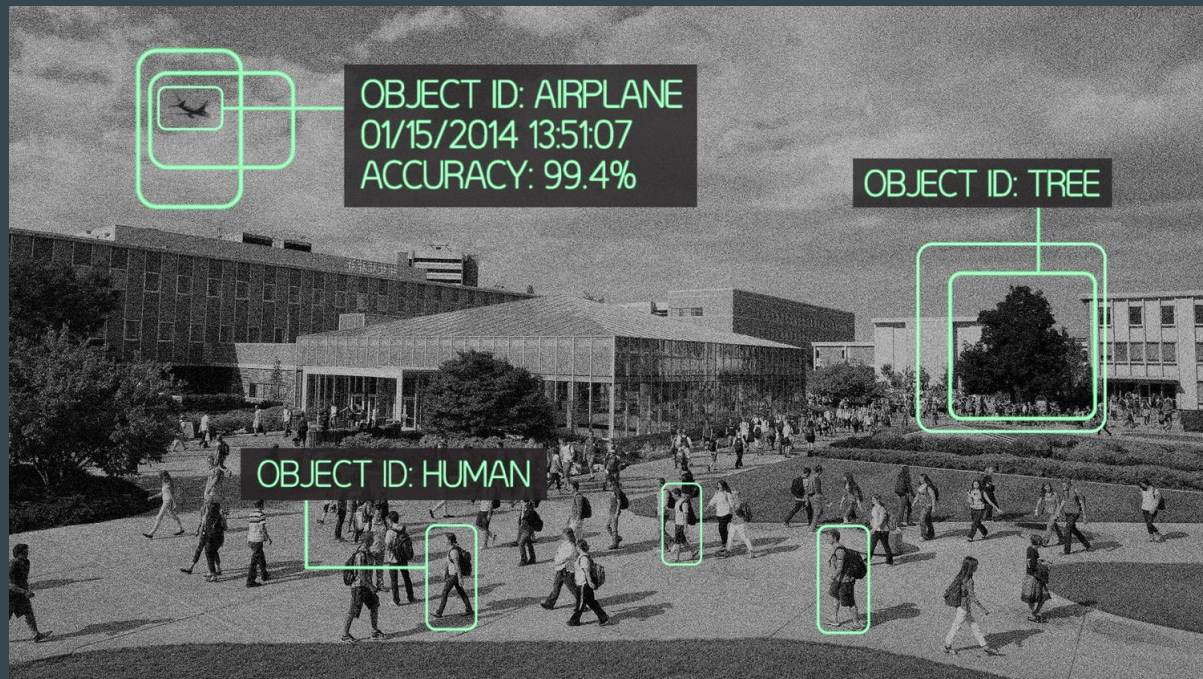
Academic Research



| Instagram

Research Direction

- NLP
- Computer Vision
- Combination & Cross Validation
- Sociology & Praxeology
 - Personality
 - Food
 - Public Health
 -

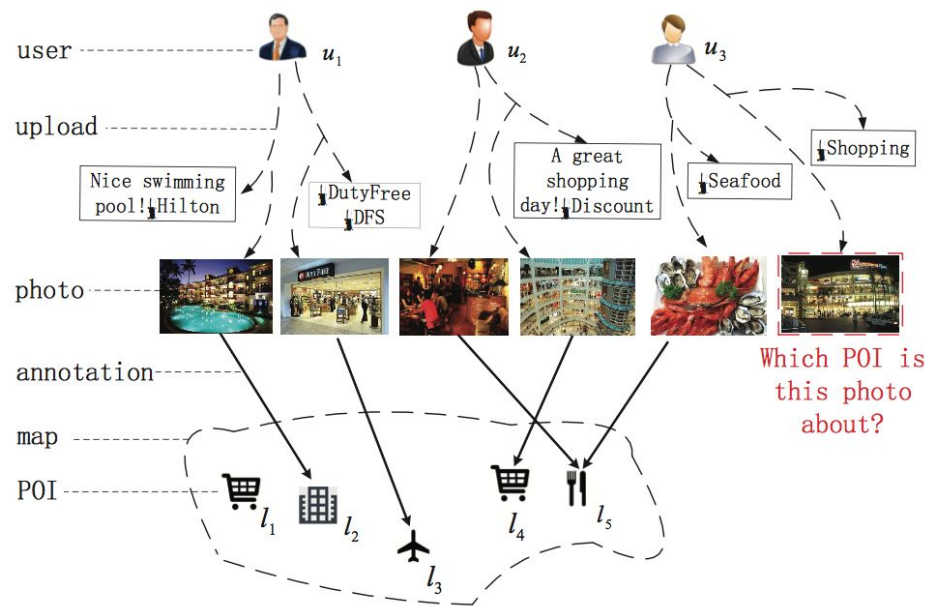


Instagram

Where you Instagram? Associating Your Instagram Photos with Points of Interest

- By researchers of Nanyang Technological University and Institute for Infocomm Research in Singapore;
- Evaluated by a ranking function;
- Used textual, visual and user information of photos.

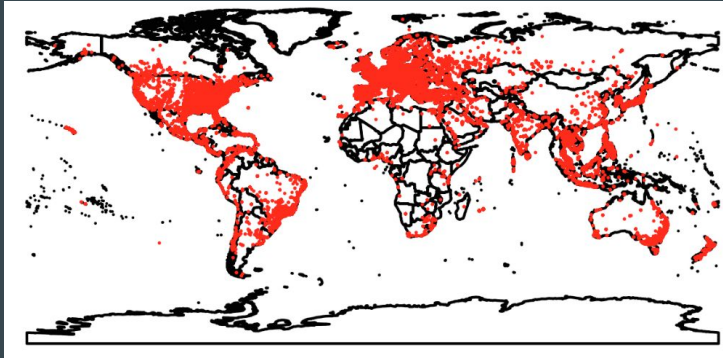
$$\mathcal{J} = \mathcal{O}_{main} + \alpha_1 \mathcal{O}_1 + \alpha_2 \mathcal{O}_2 + \frac{\lambda_W}{2} \sum_{\ell \in \mathcal{L}} \|\mathbf{w}_\ell\|_2^2 + \frac{\lambda_V}{2} \sum_{\ell \in \mathcal{L}} \|\mathbf{v}_\ell\|_2^2$$



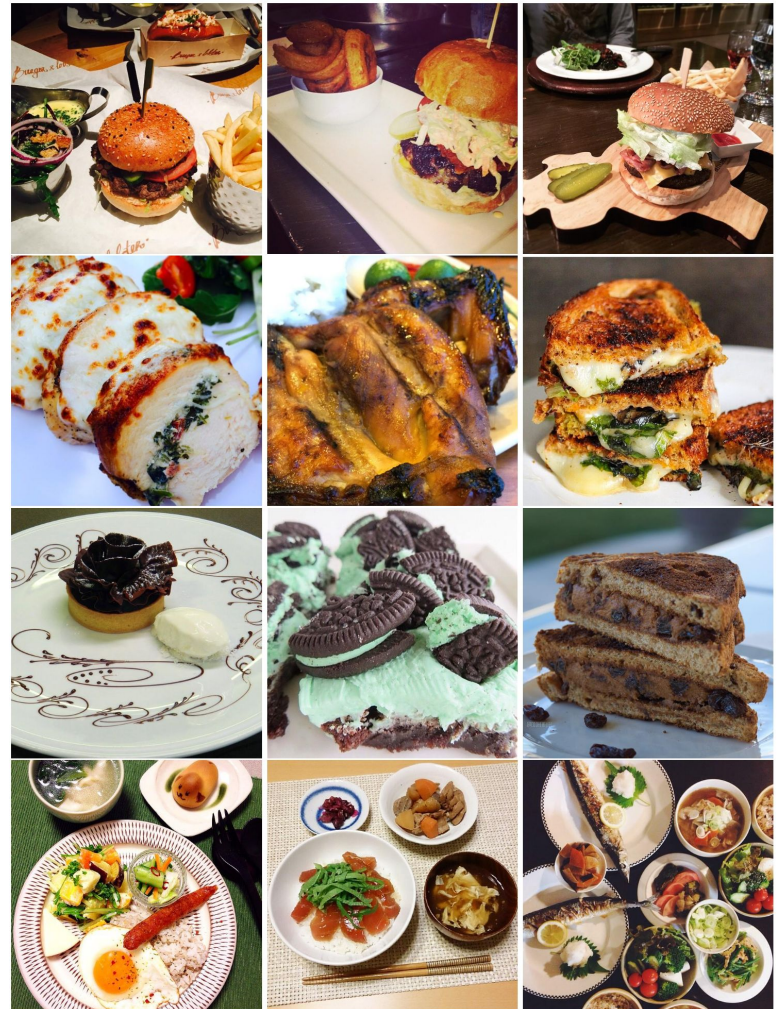
Instagram

Towards Bottom-Up Analysis of Social Food

- By researchers of Queen Mary University of London;
- Tag & Image;
- SVM: Classify tags;
- Convolutional Neural Networks: Classify images;

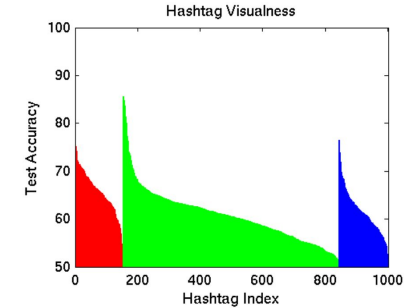
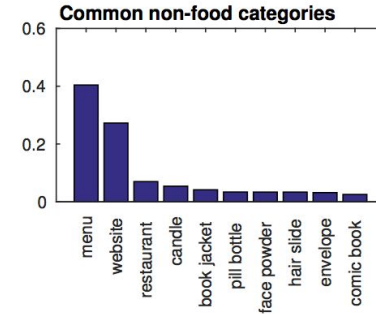
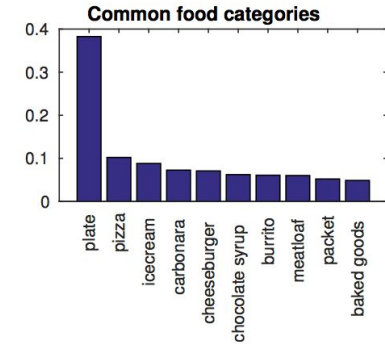
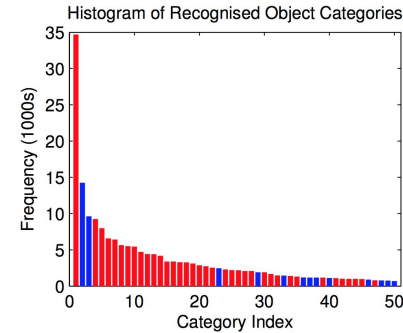


Instagram



Towards Bottom-Up Analysis of Social Food

- Analysis on the correlation of tags and images.
 - What Proportion of Food-Tagged Images Actually Contain Food?
 - Which Tags have Visual Correlates?
 - Which Food Tags are Visually Recognisable?



Top-20 most visual food hashtags.

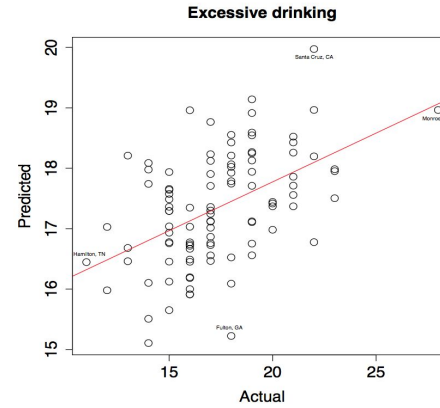
Rank	Hashtag	Freq	Rank	Nrm Acc	Prec @ 20	AP
1	breakfast (Japanese)	271		83.8%	0.70	0.55
2	breakfast (Traditional Japanese)	343		82.1%	0.325	0.317
3	home food (Japanese)	253		77.1%	0.525	0.54
4	fries	140		71.4%	0.35	0.302
5	sushi	100		75.4%	0.25	0.232
6	burger	129		73.8%	0.35	0.373
7	dessertporn*	218		74.7%	0.55	0.620
8	roast	179		70.6%	0.50	0.488
9	spaghetti	163		75.2%	0.60	0.675
10	theartofplating*	295		79.2%	0.70	0.549



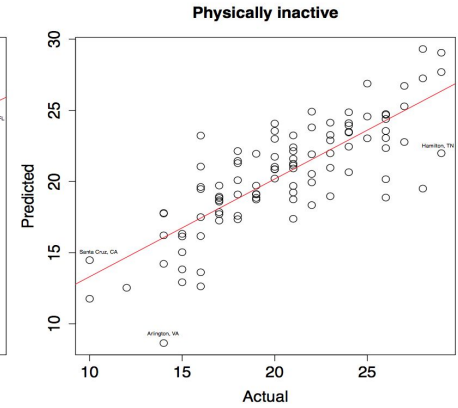
Instagram

Social Media Image Analysis for Public Health

- By researchers of Aalto University, Carnegie Mellon University, and Qatar Computing Research Institute;
- Geo-tagged images and regional public health;
- Especially lifestyle related diseases.



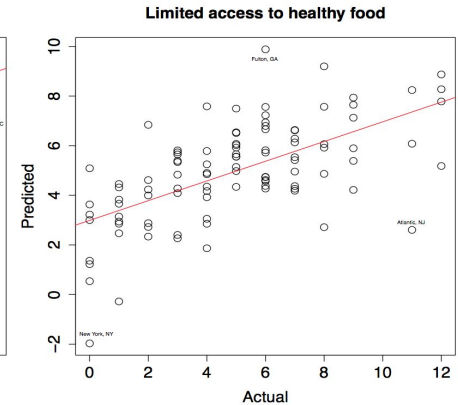
(a)



(b)



(c)



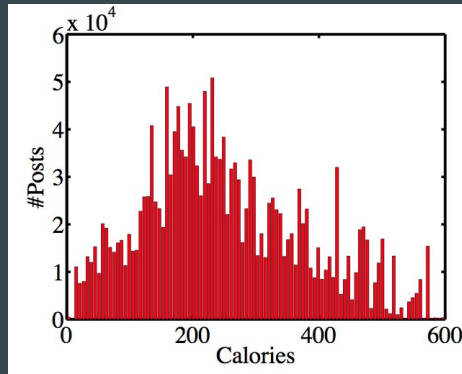
(d)



Instagram

Measuring and Characterizing Nutritional Information of Food and Ingestion Content in Instagram

- By researchers of Georgia Institute of Technology;
- Detect calorific content in posts by NLP;
- Use image for validation.



Instagram

Fusing Social Media Cues - Personality Prediction from Twitter and Instagram

- By researchers of Johannes Kepler University and Free University of Bolzano;
- Analyzed the personality of Instagram's users by their habits and preferences on applying filters.

References

1. Where you Instagram?: Associating Your Instagram Photos with Points of Interest
<http://dl.acm.org/citation.cfm?id=2806463&dl=ACM&coll=DL&CFID=698677544&CFTOKEN=69706557>
2. Towards Bottom-Up Analysis of Social Food
<http://dl.acm.org/citation.cfm?id=2897734&CFID=698677544&CFTOKEN=69706557>
3. Social Media Image Analysis for Public Health
<http://dl.acm.org/citation.cfm?id=2858234&CFID=698677544&CFTOKEN=69706557>
4. Measuring and Characterizing Nutritional Information of Food and Ingestion Content in Instagram
<http://dl.acm.org/citation.cfm?id=2742754&CFID=698677544&CFTOKEN=69706557>
5. Fusing Social Media Cues - Personality Prediction from Twitter and Instagram
<http://dl.acm.org/citation.cfm?id=2889368&CFID=698677544&CFTOKEN=69706557>
6. Instagram API: <https://www.instagram.com/developer/>



| Instagram



| Instagram

...

Thank you!