

Privacy and Security in Online Social Media

Course on NPTEL

NOC21-CS28

Week 5.1

Ponnurangam Kumaraguru (“PK”)

Full Professor

ACM Distinguished Speaker

fb/ponnurangam.kumaraguru, @ponguru



Topics that we will cover

- Overview of OSM
- Linux / Python / Twitter API / Mongo DB / MySQL
[Hands-on]
- Trust & Credibility
- **Privacy**
- Social Network Analysis, NLTK [Hands-on]
- e-crime
- Plotly / Highcharts / Geo-location analysis
[Hands-on]
- Policing
- Identity resolution
- What next – Deep learning, machine learning, NLP, Image analysis

Experiments

- Online – Online
- Offline – Online
- Predicted SSN from public data



We Know Where You Live: Privacy Characterization of Foursquare Behavior

**Tatiana Pontes*, Marisa Vasconcelos*, Jussara Almeida*,
Ponnurangam Kumaraguru†, Virgilio Almeida***

***Universidade Federal de Minas Gerais, Brazil**

†Indraprastha Institute of Information Technology, India

***{tpontes,marisav,jussara,virgilio}@dcc.ufmg.br**

†pk@iiitd.ac.in

Beware of What You Share: Inferring Home Location in Social Networks

Tatiana Pontes*, Gabriel Magno*, Marisa Vasconcelos*, Aditi Gupta[†],
Jussara Almeida*, Ponnurangam Kumaraguru[†], Virgilio Almeida*

*Universidade Federal de Minas Gerais, Brazil
{tpontes,magno,marisav,jussara,virgilio}@dcc.ufmg.br

[†]Indraprastha Institute of Information Technology, India
{aditig,pk}@iiitd.ac.in

Interested?

- WWW <http://www.www2017.com.au/>
- ICWSM <http://icwsm.org/2017/>
- COSN <http://cosn.acm.org/>
- CSCW <https://cscw.acm.org/2017/>
- ...

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- **Policing**
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[Hands-on]
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How you use OSM?

- How many friends and followers do you have on Facebook and Twitter?
- How many of you are friends with police on your social network?
- How often you use social networks to
 - Post comments
 - Interact with police

Ever wondered What makes police to use social media?

The Power: Social Media



Do you remember this picture?

#myNYPD



NYPD NEWS ✓

@NYPDnews

Do you have a photo w/ a
#myNYPD. It may be feat

11:25 PM - 22 Apr 2014

428 RETWEETS 226 FAVORITES



Michael Krieger

@LibertyBlitz

This is what the top pictures on #myNYPD hashtag look like at the
moment:

2:40 AM - 23 Apr 2014

117 RETWEETS 38 FAVORITES



Follow



Follow

photo w/ a member of
PD



#myNYPD to #myLAPD

#MyNYPD Twitter Fail Spawns #MyLAPD, Showing Police Hard At Work Beating Folks Up



Gaga Cheat

@MissStef0318

Follow

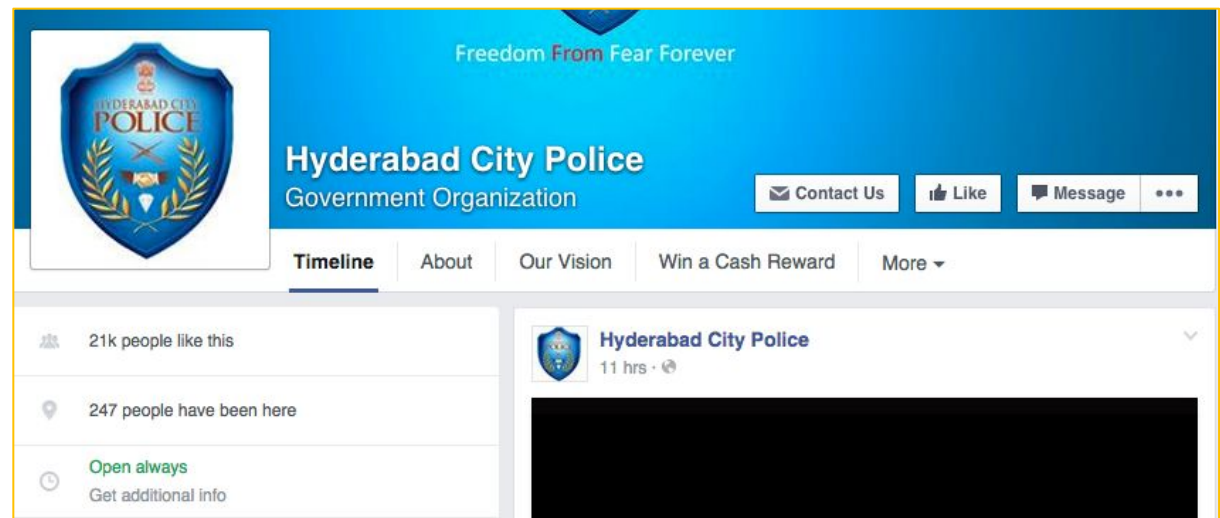
#MyLAPD well, it's @HawthornePD in L.A. county so it counts.
Watch your dogs! Your police force working for you.

7:13 AM - 23 Apr 2014

132 RETWEETS 46 FAVORITES



Multiple Police Dept. on OSN



BLR City Police on OSN



BENGALURU CITY POLICE
11 hrs · 🌐

Tweet by Addl. Commissioner of Police - Traffic
Bengaluru City.

Dr. M.A. Saleem, IPS
@AddICPTraffic

We have commenced operations of BMTC buses on Avenue road from today on experimental basis, Hope to decongest Town hall area.

Like · Comment · Share

👍 54 people like this. Most Relevant ▾

➦ 1 share

Write a comment... 📷

👤 Crazy?!
Like · Reply · 👍 1 · 11 hrs

👤 at will be terrible for pedestrians.. avenue road has so many carts, pedestrians and luggage autos going..
Like · Reply · 11 hrs

138k people like

939 people have

Open always
Get additional info

Invite friends to

4.2 ★
4.2 of 5 stars · 1
View Reviews

ABOUT

Premier enforcer for law and order in the city of Bangalore, India

Typical Post Looks like

Keep citizens informed



TWEETS
8,187

FOLLOWING
46

FOLLOWERS
335K

FAVORITES
848

M N Reddi, IPS ✓

@CPBlr

M N Reddi, IPS, YOUR Commissioner of Police, Bengaluru City. Trying to make Bengaluru Police, YOUR OWN POLICE!

📍 Bengaluru City - 560001

🔗 bcp.gov.in/home.aspx

Tweets

Tweets & replies

Photos & videos

📌 Pinned Tweet



M N Reddi, IPS @CPBlr 🌟🌟🌟🌟🌟 · Oct 28

My new bio for @CPBlr : " M N Reddi, IPS, Commissioner of Police, Bangalore City. Trying to make Bangalore Police YOUR OWN POLICE!"



TWEETS
10.7K

FOLLOWING
60

FOLLOWERS
688K

LIKES
960



Following

N S Megharikh, IPS ✓

@CPBlr

N S Megharikh, IPS, Commissioner of Police.

📍 Bengaluru City - 560001

🌐 bcp.gov.in/home.aspx

📅 Joined July 2014

✉ Tweet to N S Megharikh, IPS

Tweets

Tweets & replies

Media



N S Megharikh, IPS @CPBlr · 23h

एक गरीब लड़के को एक चिराग मिला

उसने उठाया और रगड़ दिया
ज़ोरदार धमाका हुआ
खुद मर गया,

"अलादीन का ज़माना गया,

लावारीस वस्तुओं से दूर रहो

Who to follow · Refresh · View all



Shah Rukh Khan ✓ @iamsrk

+ Follow



Aamir Khan ✓ @aamir_khan

+ Follow



Shashi Tharoor ✓ @Shashi...

+ Follow

Find friends

Popular departments

Police Departments	Likes	Followers	Post	Joined
USA				
New York	383,372	147,000	No	2012
Boston	137,403	312,000	No	2010
Baltimore	36,530	70,400	Yes	2012
Metropolitan, Columbia	16,071	56,900	Yes	2008
Seattle	12,912	103,000	No	2010
UK				
Greater Manchester*	98,193	205,000	Yes	2011
West Midlands*	86,904	115,000	No	2008
Essex*	66,461	85,300	No	2011
London*	46,889	267,000	No	2011
Northern Ireland*	26,173	71,300	No	2009

Popular departments – India

Police Departments	Likes	Followers	Post	Joined
Bangalore Traffic	2,49,968	8,045	Yes	2012
Delhi Traffic	2,02,858	2,59,000	Yes	2011
Hyderabad Traffic	1,88,480	1,361	Yes	2012
Bangalore City	1,05,463	12,100	Yes	2011
Kolkata Traffic	63,789	-	Yes	2010
Chennai	50,979	1,108	Yes	2013
Gurgaon	43,901	718	Yes	2013
Gurgaon Traffic	24,475	-	Yes	2010
Hyderabad	13,602	537	Yes	2014
UP Police PR	8,486	4,585	Yes	2013
Guwahati Police	3,255	295	Yes	2011

Bangalore Police



Bangalore City Police

ಈ ರೇಳೆಕಂಡ ವಾಂಟೆಡ್ ಅಪರಾಧಿಗಳ ಬಗ್ಗೆ ಮಾಹಿತಿ ನೀಡಿದರೆ 10 ಲಕ್ಷ ನಗದು ಹಣ ನೀಡಲಾಗುವುದು. ಯಾಸಿನ್ ಭಟ್ಟರ್, ತಹಸೀನ್, ಅಸದುಲ್ಲ ಅಖ್ತರ್ ಮತ್ತು ವಾಕ್ವಾಸ್ ಈ ಎಲ್ಲಾ "ವಾಂಟೆಡ್ ಅಪರಾಧಿಗಳು" ಮುಂಬೈ ವಿರೋಧಿ ಭಯೋತ್ಪಾದನೆ ಸ್ಟಾಡ್ (ATS) 2011 ಮತ್ತು 2012 ರಲ್ಲಿ ಮುಂಬೈ ಮತ್ತು ಪುಣೆ ಬಾಂಬ್ ಸ್ಫೋಟಕ್ಕೆ ಸಂಬಂಧಿಸಿದ್ದಾರೆ. ಈ ಅಪರಾಧಿಗಳ ಬಗ್ಗೆ ಯಾವುದೇ ಮಾಹಿತಿ ನಿಮಗಿದ್ದರೆ, ಕೂಡಲೇ ಈ ಸಂಬಂಧ ಗೆರೆ ಮಾಡಿ ತಿಳಿಸಿ. ದೂರವಾಣಿ ಸಂಖ್ಯೆ : Tel: 022.23791619, Mob: +91.9619122222 / +91.8652012345 ಈ ಮೇಲ್ : atswantedaccused@gmail.com ನಿಮ್ಮ ಹೆಸರು ಮತ್ತು ವಿವರಗಳನ್ನು ಸಂಪೂರ್ಣವಾಗಿ ಗೌಪ್ಯವಾಗಿ ಇಡಲಾಗುತ್ತದೆ.

Cash reward of Rs. 10 Lac on providing information of these Wanted Criminals

Yasin Bhatkal, Tahaseen, Asadullah Akhtar and Waqas are all 'WANTED CRIMINALS' by the Anti Terrorism Squad (ATS) Mumbai in connection with the Mumbai and Pune Bomb blasts in 2011 and 2012.

If you have any information about these criminals, please report to the authorities immediately.
Tel: 022. 23791619, Mob: +91. 9619122222 / +91. 8652012345
Email: atswantedaccused@gmail.com

Your name and details will be kept completely confidential.

Like · Comment · Share · February 28

<https://www.facebook.com/blrcitypolice>

Delhi Police



Delhi Traffic Police
176,993 likes · 1,203 talking about this

Government Organization
Delhi Traffic Police manages 'traffic mobility with safety'. Substantial achievements in traffic management with lesser accidents....



 **176k**

[About](#) · [Suggest an Edit](#)

[Photos](#)

[Likes](#)



Delhi Traffic Police
@dtptraffic
24x7 Control Room : +91-11-25844444
📍 India, Delhi
🌐 delhitrafficpolice.nic.in
🕒 Joined May 2010

TWEETS
5,397

PHOTOS/VIDEOS
1

FOLLOWERS
128K

Tweets

Tweets and replies

 **Delhi Traffic Police** @dtptraffic
Martyr Traffic Constable
Upholding the finest
our Traffic constables

**Delhi Traffic Police**
20 hours ago

We thank all those who posted their condolences and prayers on the death of Constable Mana Ram in response to the post of Spl. CP/Traffic. Some posts sought more details of the incident and the action against the offenders. This is an update.

Constable Mana Ram of Traffic Unit lost his life yesterday in what can certainly not be called an accident when he signalled a car to follow the diversion pl... [See More](#)

[Like](#) · [Comment](#) · [Share](#)

 **54 Shares**

 **147 people like this.**

 [View previous comments](#)

2 of 183

 **Atul Arora** please bring one post in delhi police of saheed mana ram family person and demand heavy punishment for those person who killed one of the brave soldier of delhi police
about an hour ago · [Like](#)

 **Praveen Kumar Panna** It is not a time mourn... What Mana Ram did deserves respect.. but this is only one extreme case of what happens daily in NCR.. the growing arrogance of local people, car owners or drivers.. Everyone has chacha, mama as ministers or police officials.. ... [See More](#)
43 minutes ago · [Like](#)



<https://www.facebook.com/pages/Delhi-Traffic-Police/117817371573308>

Delhi fake account?



Delhi Traffic Polize
(Delhi Traffic Police)

Message ...

Timeline About Photos Friends More ▾

DO YOU KNOW DELHI TRAFFIC?

If you know Delhi Traffic, send him a message.

ABOUT

Lives in New Delhi, India

PHOTOS

Delhi Traffic Polize
May 27

Traffic Advisory

in view of VVIP movement, traffic diversions shall be given on the following roads today:

1. Sardar Patel Marg
2. Panchsheel Marg
3. Kamal Ataturk Marg



<https://www.facebook.com/delhitraffic.polize?fref=ts>

UP Police

U.P. Police

FaceBook Page of U.P. PolicePR

थाने, सफ़िकल, ज़िले, रेंज और जोन से जब आसानी से आपको न मिले पुलिस सहायता और जानकारी, तब इस फ़ेसबुक पेज पर आइये अपनी बात इस सार्वजनिक फ़ोरम से आला अफ़सयें तक पहुंचाइए। सुझाव भी दीजिये, उपयोगी सुरक्षा टिप्स भी लीजिये तथा पुलिस से निकटता भी बढ़ाईये। भेदभाव न होगा किसी से, आप भी अपने मतभेद यहाँ न चिपकाइए।

Police PR Call's spontaneous responses and does not essentially constitute the departmental version, stand or policy for that matter.



UP Police PR

3,308 likes · 111 talking about this

Government Organization

Instant Official Police updates, Reactions and Interactions from the largest State of India. Tweet complaints, get response. Monitored at DGP level.

Lucknow

एसटीएफ से मुठभेड़ में शांतिर हकल गिरफ्तार

3,308



UP Police PR shared Pro TO Dgp UP's status.
September 8

कृपया FACEBOOK, TWITTER, YOU TUBE, WHATSAPP पर प्रचारित किसी भी प्रकार की अफवाह, वीडियो क्लिपिंग पर विश्वास न करें। उपद्रवियों पर सख्ती से काबू पाया जा रहा है।

पता/Postal: पुलिस महानिदेशक-DGP, उत्तर प्रदेश, लखनऊ-226001
ईमेल/E-mails: police@up.nic.in, perpol@up.nic.in वेबसाइट/Website: www.uppolice.up.nic.in Twitter: @uppolicepr



UP Police

Twitter ID: @uppolicepr

The views expressed here are Police PR Call's spontaneous response and does not essentially constitute the departmental version, stand or policy on that matter.

Friendly Police Help and Assistance forum to facilitate the citizens who fail to get it at the PS, Circle, District, Range and Zone level. Here you may share your policing related thoughts, opinions and get useful security tips and guidance on any policing issue.

Lucknow · uppolice.up.nic.in

4,950 TWEETS

259 FOLLOWING

2,439 FOLLOWERS

Hyderabad Police



FOR YOU WITH YOU ALWAYS
HYDERABAD
TRAFFIC POLICE

Supported by **Omniopolis**

Mayor of Bogota

Hyderabad Traffic Police

129,679 likes · 12,107 talking about this

Government Organization
Post your Grievances, Suggestions, Feedback and Participation interest in various initiatives of Hyderabad Traffic Police. Officially Launched – 3-Aug-2022

About · Suggest an Edit



Photos

Traffic Fines & More

Traffic Fines & More



FOR YOU WITH YOU ALWAYS
HYDERABAD
TRAFFIC POLICE

Hyderabad Traffic

@HYDTraffic

TWEETS	PHOTOS/VIDEOS	FOLLOWING	FOLLOWERS
15	1	1	1,004

Tweets Tweets and replies

7:57 PM -

Hyderabad Traffic @HYDTraffic



Hyderabad Traffic Police

June 12

In a medical emergency EVERY SECOND counts..Make way for the ambulance...Save life...Empty Ambulance in emergency is also to pickup emergency case so just Give Way to Ambulance which is in hurry to save life.....Admin HR !

Like · Comment · Share

40 Shares

146 people like this.

Top Comments ▾



9490616555

fb/hyderabadpolice

Lost Report App



op APP
Solutions

TWEETS
5,081

FOLLOWING
157

FOLLOWERS
10.8K

LIKES
475



Follow

hyderabadpolice ✓

@hydcitypolice

The Hyderabad Police is here for you 24/7. We're committed to making it quicker and easier for you to get the service you need from us.

Hyderabad

hyderabadpolice.gov.in/Default.htm

Joined October 2014

Tweet to hyderabadpolice

Tweets

Tweets & replies

Media



Pinned Tweet



hyderabadpolice @hydcitypolice · Aug 11

facebook.com/hyderabadpolice ...



HAWKEYE

Empowering Public to be a Citizen Police



HYDCOP

Empowering Frontline Police Officers

Who to follow · Refresh · View all



Shah Rukh Khan ✓ @iamsrk ×

Follow



Aamir Khan ✓ @aamir_khan ×

Follow



Anupam Kher ✓ @Anupam... ×

Follow

Find friends

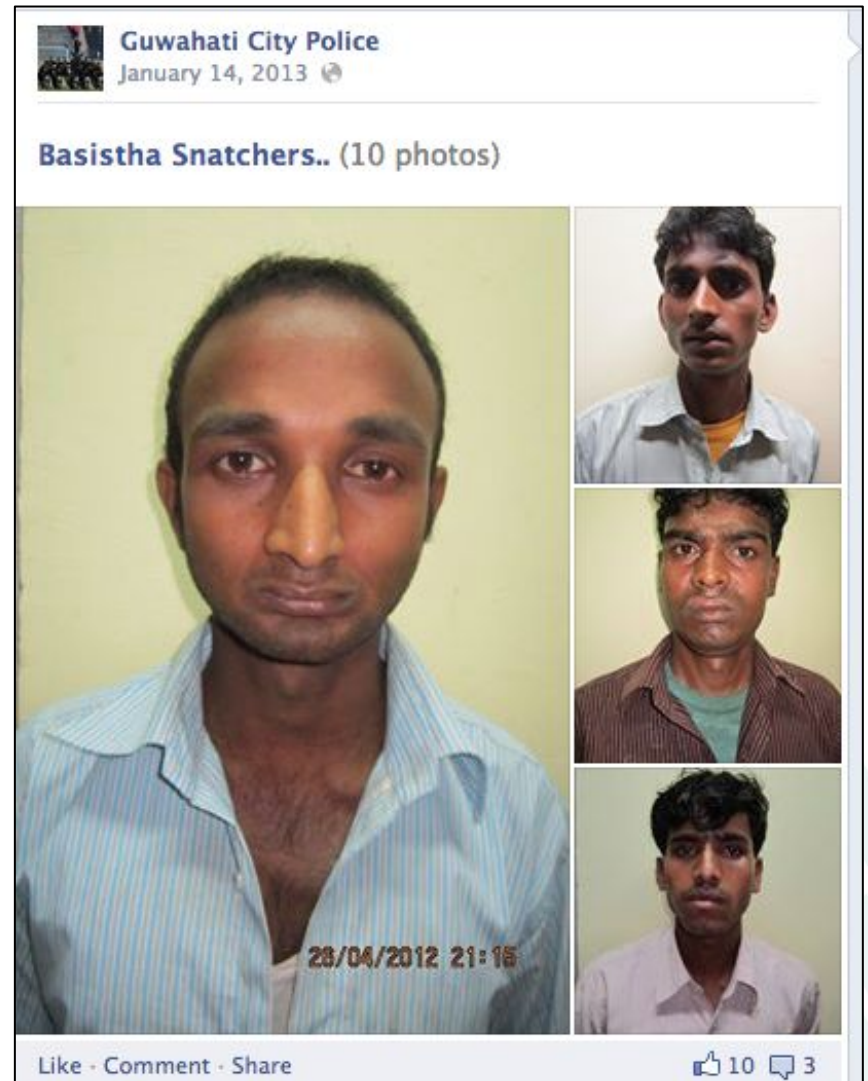
Hyderabad



Gurgaon Police



Guwahati Police



Kolkata Police



Kolkata Traffic Police

53,719 likes · 1,250 talking about this

Product/Service
KolkataTraffic Police location: Kolkata
<http://twitter.com/Kptraffice>



53,719



TWEETS
8

FOLLOWING
50

FOLLOWERS
413



Follow

Kolkata Police

@KolkataPolice

Fake Kolkata Police Twitter :)

Kolkata



TWEETS
1

FOLLOWING
4

FOLLOWERS
19

Kolkata police

@Kolkatapolicel

Kolkata and west bengal police



Kolkata Traffic Police

June 14

On 14th June 2014 at about 13.00hrs demonstration at college Square, earlier procession will be taken out from Sealdah & Howrah Rail Station, expected strength 3000/4000.

Like · Comment · Share

1 Share

12 people like this.

Tweets Tweets and replies



Kolkata Police @KolkataPolice · 27 Apr 2010

If you see our vans a rockin, someone inside is gettin a knockin!

2 2



Kolkata Police @KolkataPolice · 23 Apr 2010

Planning a party this weekend, need booze, time to hit the night clubs for their "hafta"!

2



<https://twitter.com/KolkataPolice>

Pune Police



**PUNE TRAFFIC
POLICE**

Pune Traffic Police

4.0 ★★★★★ (671 ratings)

55,271 likes · 12,729 talking about this ·



Pune Police

@PunePolice

punepolice.gov.in

TWEETS

2

FOLLOWING

0

FOLLOWERS

58



Pune Traffic Police

June 13

प्रेसनोट

जा.क्र./पोडआ/वाह/ ८१० /१४

पुणे दिनांक - १२/०६/२०१४

पुणे शहरातील वाहतूक सुरक्षित व सुरळीतपणे होणेकरिता, महाराष्ट्र शासन गृह विभाग क्र. एम. व्ही. ए. ०१९६/८७९/सीआर - ३७/टीआरए - २, दिनांक - २७/०९/१९९६ चे नोटीफिकेशननुसार मोटार वाहन कायदा कलम ११५, ११६(१) (ए) (बी), ११६(४) आणि ११७ अन्वये मला प्राप्त झालेल्या अधिकाराचा वापर करून प्राप्त हरकती व सुचनांचा विचार करून मी व्ही. डी. पांडरे, पोलीस उप-आयुक्त, वाहतूक नियंत्रण शाखा, पुणे शहर, यापुढी या ठिकाणी काही पार्किंग निर्बंध असतील ते रद्द करण्यात येत असून तात्पुरत्या स्वरूपात खालील प्रमाणे आदेश निर्गमित करण्यात येत आहेत.

तरी नागरीकांनी याबाबत आपल्या काही सुचना असल्यास त्या पोलीस उप-आयुक्त, वाहतूक नियंत्रण शाखा, साधु वासवानी रोड, पुणे - १ यांचे कार्यालयात दिनांक - १२/०६/२०१४ ते दिनांक - २०/०६/२०१४ पर्यंत लेखी स्वरूपात कळवाव्यात. नागरीकांच्या सूचन व हरकती विचार करून व अत्यावश्यक सेवेतील वाहने (उदा. फायरब्रिगेड, पोलीस वाहने, रुग्णवाहीका, इ.) खेरीज करून अंतिम आदेश काढण्यात येतील.

कोरेगाव पार्क वाहतूक विभाग पुणे अंतर्गत, कृष्णकुंज सोसायटी ते इशान टॉवर को-ऑप सोसायटीपर्यंत रस्त्याचे दोन्ही बाजूस नो - पार्किंग करणेत येत आहे.

(विश्वास पांडरे)
१३/६

पोलीस उप-आयुक्त, वाहतूक
पुणे शहर

Like · Comment · Share

130 people like this.

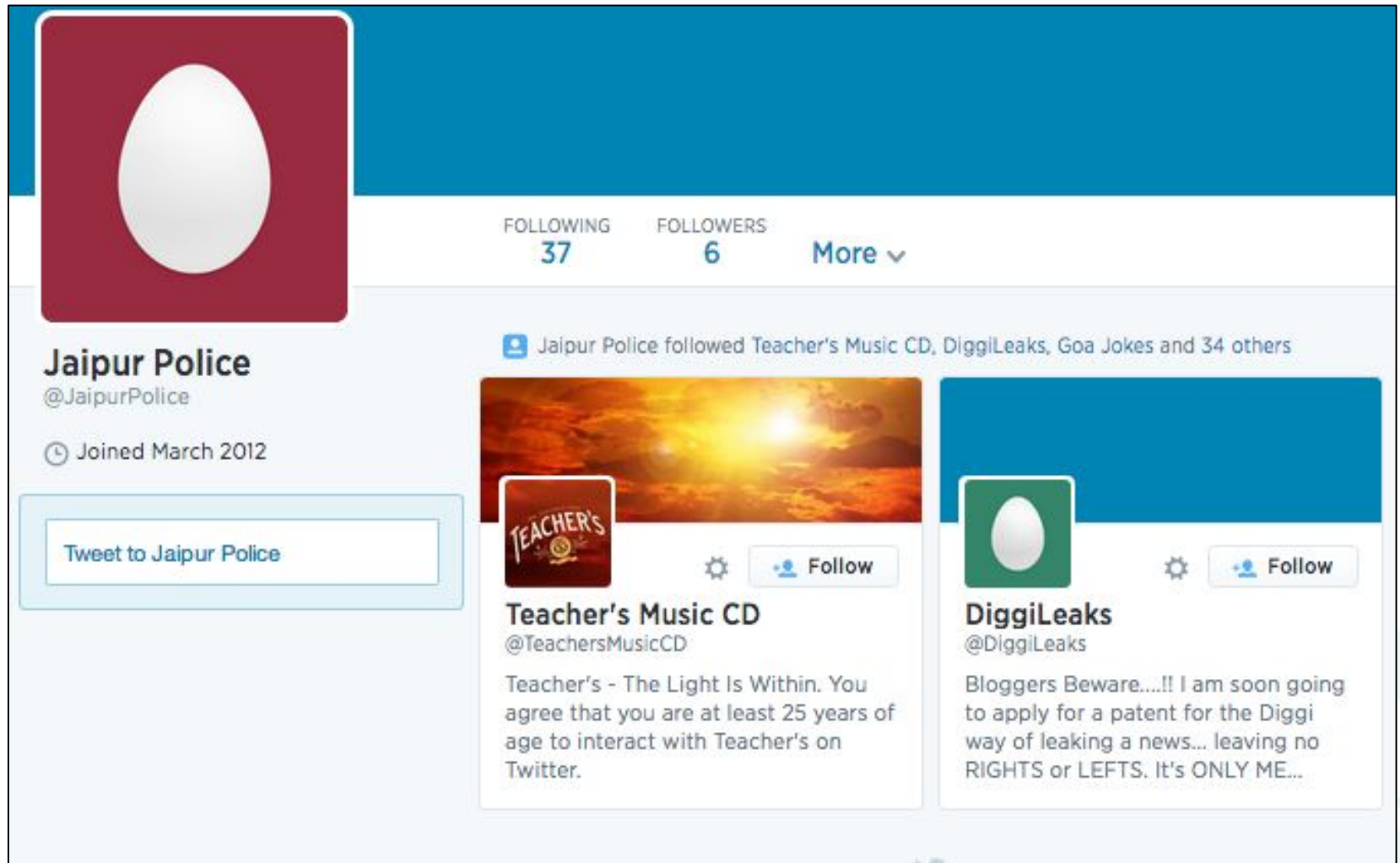
21 Shares

Top Comments ·

Jaipur Police



Like it or not but you are there!



The screenshot shows the Twitter profile of 'Jaipur Police' (@JaipurPolice). The profile picture is a red square with a white egg in the center. The header bar is blue. Below the profile picture, the name 'Jaipur Police' and handle '@JaipurPolice' are displayed, along with the join date 'Joined March 2012'. To the right, it shows 'FOLLOWING 37' and 'FOLLOWERS 6' with a 'More' dropdown. A text box on the left says 'Tweet to Jaipur Police'. The main content area shows a notification: 'Jaipur Police followed Teacher's Music CD, DiggiLeaks, Goa Jokes and 34 others'. Below this are two user cards. The first card is for 'Teacher's Music CD' (@TeachersMusicCD) with a sunset background and a bio that reads: 'Teacher's - The Light Is Within. You agree that you are at least 25 years of age to interact with Teacher's on Twitter.' The second card is for 'DiggiLeaks' (@DiggiLeaks) with a green square profile picture containing a white egg and a bio that reads: 'Bloggers Beware....!! I am soon going to apply for a patent for the Diggi way of leaking a news... leaving no RIGHTS or LEFTS. It's ONLY ME...'. Both cards have a 'Follow' button.

Jaipur Police
@JaipurPolice
Joined March 2012

Tweet to Jaipur Police

FOLLOWING 37 FOLLOWERS 6 More ▾

Jaipur Police followed Teacher's Music CD, DiggiLeaks, Goa Jokes and 34 others

Teacher's Music CD
@TeachersMusicCD
Teacher's - The Light Is Within. You agree that you are at least 25 years of age to interact with Teacher's on Twitter.

DiggiLeaks
@DiggiLeaks
Bloggers Beware....!! I am soon going to apply for a patent for the Diggi way of leaking a news... leaving no RIGHTS or LEFTS. It's ONLY ME...

Multiple accounts



Accounts in the country!

In an attempt to understand the comprehensive view of usage of Online Social Media by Police organizations, we have developed this page with different Facebook and Twitter handles of various police organizations in the country. If you see any of the pages / handles are missing or erroneously linked to wrong pages / handles, please let us know, we will be happy to fix it. Our hope is to create a True Positive dataset of all Social Media presence of police organizations. Please feel free to write to pk@iiitd.ac.in for any feedback / suggestions / questions.

State	Police organization with State/City	Facebook page	Twitter handle	Source
Andaman & Nicobar	Andaman Police	-	AndamanPolice	Yet to be confirmed
Andhra Pradesh	Andhra Police	uday8bnaps	-	Yet to be confirmed
Andhra Pradesh	Visakhapatnam Traffic Police	visakhapatnamtrafficpolice	-	Yet to be confirmed
Assam	Assam Police	Assam-Police-144712972235962	assam_police	Taken from website
Assam	Central Police District - Guwahati	CPDGuwahati	-	Yet to be confirmed
Assam	Guwahati Police	Guwahati-City-Police-211606768891234	-	Yet to be confirmed
Bihar	Patna Traffic Police	PatnaTrafficPolice	-	Yet to be confirmed
Chandigarh	Chandigarh Traffic Police	trafficpolicechd	-	Taken from website
Chandigarh	Chandigarh Police	Chandigarh-Police-224891637660233	-	Yet to be confirmed
Chhattisgarh	Chhattisgarh Police	Chattisgarh-police-270969929619557	-	Taken from website
Chhattisgarh	Durg Police	Durg-Police-598102293653829	-	Taken from website

<http://precog.iiitd.edu.in/research/osm-policing-india/handles.html>

Analyzing Accounts

Continuing our efforts in helping policing in the country with usage of online social media, we have built this portal. The Portal helps analyse the presence of different police Facebook pages and Twitter handles, it also helps in comparing these accounts. This first version presents four different analyses described below. Currently, the portal has data for the last 5 years of these pages & accounts.

a) Total posts / Likes / Comments: This shows the engagement of the police department on social media on a given time frame. This presents the total number of posts, total number Likes, and total number of Comments on the respective Facebook pages. This also presents the total number of Retweets, Tweets, and Favorites of the Twitter handle.

b) Accountability Tree: We capture this through different words such as "how can", "why" and "issues". These words populated in the list "Change Keyword". For example, you can view the tree with "why" as the keyword to understand the questions posed in the status updates / posts with "why", one can modify the keyword to "need" to understand the needs of citizens mentioned in the posts. We believe, this can be very useful for police organizations to understand the actionable information from the posts. [See More -->](#)



<http://precog.iiitd.edu.in/research/osm-policing-india/analyse/>

Thank you

pk@iiitd.ac.in

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