Why we shouldn't give up on diversity on the Web, just yet...

TEDxDresden, 11.09.2016























1: Central service providers 2: Global access over the Internet



Perfect observability!

Explicit

- Created content
- Comments
- Structural interaction (contacts, likes)

But I've got nothing to hide...?

Inferred

- Preference and
- Image recognition models

"Meta data"

- Session artifacts (time of actions)
- interest (retrieved profiles; membership in groups/participation in discussions)
- influence
- Clickstreams, ad preferences
- communication (end points, type, intensity, frequency, extent)
- *location* (IP; shared; gps coordinates)

Externally correlated

• Observation in ad networks

Explicit

- Created content
- Comments
- Structural interaction (contacts, likes)

But I've got nothing to hide...?

Inferred

- Preference and

"Meta data"

Private traits and attributes are predictable from digital records of human behavior Michal Kosinski^{a,1}, David Stillwell^a, and Thore Graepel

+ifacts (time of

browsing logs (11-15). Similarly, it has been shown that personality browsniplogs (11–13). Similarly, it has been shown that personality can be predicted based on the contents of personal Web sites (16), music collections (17), properties of Facebook or Twitter profiles such as the number of friends or their density of friendship networks (18–21), or Inagauge used by their collection (22). Furthermore, loca-tion within a friendship network at Facebook we shown to be

(18-21), or ranguage used of men users (22), runnermore, roca-tion within a friendship network at Facebook was shown to be

gine, or subscriptions to related a writer enamers, in contrast to these other sources of information, Facebook Likes are unusual in that they are currently publicly available to default. However, those other digital records are still available to numerous parties

(e.g., governments, developers of Web browsers, search engines,

(e.g., governments, developers of web prowsers, search engines, or Facebook applications), and, hence, similar predictions are

balgertee, standarden with the (SWL), standarde use (acco-hol, "drugs," cigarettes"), "whether an individual's parents stayed together until the individual was 21 y old," and basic de-

super ingerure turn the intrividual was 4x y ora, and oaste ue-mographic attributes such as "age," "gender," "relationship sta-tus," and "size and density of the friendship network." Five Factor

Model (9) personality scores (n = 54,373) were established using

)S

Model (9) personanty scores (n = 34, 5/3) were extantisated using the International Personality Item Pool (IPIP) questionnaire with 20 items (25). Intelligence (n = 1.350) was measured using Raven's Standard Progressive Matrices (SPM) (26) and SWL

Natural straining trajection distribution (array) (a), and over (a = 2,340) was measured using the SWL Scale (27). Age (n = 52,700; average, $\mu = 25.6$; SD = 10), gender (n = 57,505; 62%)

 $54_{+}(0)_{i}$ average, $\mu = 25.6$; 5D = 10, genuer $(n = 37_{+}50; 62/6)$ female), relationship status ("single"/"in relationship", n = 46,027; 49% single), political views ("Liberal"/"Conservative"; n = 9,752;

Author contributions: M.K. and T.G. designed research: M.K. and D.S. performed resea M.K. and T.G. analyzed dats; and M.K. D.S., and T.G. wrote the paper.

Conflict of interest statement: D.S. received revenue as owner of the myPersonalit

This study demonstrates the degree to which relatively basic This study demonstrates the degree to which relatively basic digital records and the state of the state of the state and accurately estimate a transformation of the state of the people would topically assume to be private. The study tites that on Facebook Likes, measure to be private. The study tites to the state of the state of the state of the state of the appress their positive association with (or "Like") online control work as release friends' states measure for each

Pree School Lane, The Psychometrics Centre, University of Cambridge, Cambridge CB2 3RQ United Kingdom; and thMicrosoft Research, Cambridge CB1 2/8, United Kingdom Edited by Kenneth Wachter, University of California, Berkeley, CA, and approved February 12, 2013 (received for review October 29, 2012)

the anow that teamy accessione digital records or benavior, racebook Likes, can be used to automatically and accurately predict a range Likes, can be used to automaticany and accurately predict a range of highly sensitive personal attributes including: sexual orientaor ngray sensitive personal activities including) sexual orienta-tion, ethnicity, religious and political views, personality traits, intelligence, happiness, use of addictive substances, parental sepainteresperse, suppress, the or addictive substances, parental sepa-ration, age, and gender. The analysis presented is based on a dataset of over \$8,000 volunters who provided their Facebook Likes, detailed demographic profiles, and the results of several psychometric tests. The proposed model uses dimensionality reduction for preprocessing the Likes data, which are then entered into logistic/ preprocessing the Likes tata, which are then entered into system linear regression to predict individual psychodemographic profiles from Likes. The model correctly discriminates between homosexual and heterosexual men in 88% of cases, African Americans and and heterosexual men in 88-36 or cases, Arrican Americans and Gaucasian Americans in 95% of cases, and between Democrat and Calcesan Americans in 30% or cases, and occurrent bemokrat and Republican in 85% of cases. For the personality trait "Openness," prediction accuracy is close to the test-referst accuracy of a standard express their positive association with (or "Like") online content, such as photos, friends' status updates, Facebook pages of prod-ucts, speries, musicians, books, restaurants, or popular Web sites. Likes represent a very generic class of digital records, similar to Web search, queries, Web browsing histories, and credit card purchases. For example, observing user's related to music provide similar information to observing records of songs listened to o online, songs and aritist searched for a Web search en-gine, or subscriptions to related Twitter reharmeds. In contrast to these other sources of information, Facebook Likes are musual in personality test. We give examples of associations between attri-butes and Likes and discuss implications for online personalization and privacy.

social networks | computational social science | machine learning | big data | data mining | psychological assessme

Agrowing proportion of human activities, such as social interactions, entertainment, shopping, and gathering information, are now mediated by digital services and devices. Such tormation, are now measured by digit at services and devices, siten digitally mediated behaviors man easily be recorded and analyzed, fueling the emergence of variant services and science (1) and new services such as personalized search engines, recommender systems or Facebook applications), and, hence, similar predictions are unlikely to dispot limited to the Facebook constonment. The despot life study is presented in Fig. 1. We selected traits and attributes that reveal how accurate and the selected traits such a predictive analysis can be including "sexual orientally intrusive "ethnic origin," political views," "religion," "personality," "ar-elligence," "statistaction with life views, and interfault are are religion ethnic origin, "notifical views," religion, "personality," and the statistaction with life views and individual's neurons to a statistaction with life views and individual's neurons to a statistaction with life views and individual's neurons. Services such as personanzes usarch engines, recommencer systems (2), and argeted online marketing (3). However, the widespread availability of extensive codes of individual behavior, together with the desire to learn more about customers and citizens, presents

with the destrict of early more about outsounds and outsets, proceeds serious challenges related to privacy and data ownership (4, 5). We distinguish between data that are actually recorded and information that can be statistically predicted from such records, People may choose not to reveal certain pieces of information Proper may choose not to reveal cortain process or monomiants about their lives, such as their sexual orientation or age, and yet this information might be predicted in a statistical sense from other aspects of their lives that they do reveal. For example, a major US aspects or their tires that they do reveal. For example, it suggests the retail network used customers shopping records to predict preg-nancies of its female customers and send them well-timed and welltargeted offers (6). In some contexts, an unexpected flood of vouchers for prenatal vitamins and maternity clothing may be welcome, but it could also lead to a tragic outcome, e.g., by revealing (or incorrectly suggesting) a pregnancy of an unmarried woman to her family in a culture where this is unacceptable (7). As woman to net samp in a currare where this is unacceptance (1). As this example shows, predicting personal information to improve products, services, and targeting can also lead to dangerous inva-

Predicting individual traits and attributes based on various cues, such as samples of written text (8), answers to a psychometric test (9), or the appearance of spaces people inhabit (10), has a long history. Human migration to digital environment renders it pos-

history, riuman migration to digital environment renders a pos-sible to base such predictions on digital records of human behavior. It has been shown that age, gender, occupation, education level,

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This article is a PNAS Direct Submin

Observation in ad networks

Data deposition: The data reported in this paper have been deposited in the myPerson-ality Project database (www.mypersonality.org/wiki).

To whom correspondence should be addressed. E-mail: mk583@cam.ac.uk. Externally corrected and the second and the second

topics, with 12% of meets in sense topics beings of the sense topics. For large constant, we are of sense topics. For large constant, we are topic topics of sense topics. The sense topic topic topics of the We exhibit to the sense topic to the sense topic topics. of words (chown as morphs) to avoid keywords We analyze emergent morphs to learn how they spread by the Webto user community. Categories and Subject Descriptor 1.4 [Computer Applications]: Social and ba K.5.2 [Governmental Isaacs]: Censurship

Online social networks: Sina Weibo; Trendini

INTRODUCTION
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Idence: Internet in the second second

Le Chen, conjuer and information Science Northeastern University Joston, MA USA Jeonochen@ccs.neu.edu czha ABSTRACT

COW NO

Tweeting Under Pressure:

Electronic Frontier Foundation

of it.

www.eff.org

expression and associati

The harms of surveillance

Freedom is the freedom to say that two

On 5 June 2013, the Washington Post

Guardian simultaneously published d

that would rock the world. The documen

by ex-National Security Agency (NSA) con

ward Snowden, were not the first disclos

the United States' vast surveillance co

lance in the US – and indeed, in much

- was minimal. Disclosures made by

2011 can be credited for an uptick in

surveillance' - particularly in the Mide

did little to inspire research on the sc

ing surveilled can have a chilling

industry study conducted by the W

Forum found that in high internet pe

tries, a majority of respondents (

opinions, while 60.7% agreed that "or

that the government monitors and y 50% believe repute the Internet." At the same time, only 50% believe

the internet. As the same time, only sear a the the internet is a safe place for expressing their

The knowledge, or even the perc

Before last year, awareness of dig

have arguably had the most impact.

make four. If that is granted, all else

GEORGE ORW

General Assembly

> of opinion and ex Summary The present report, su

16/4, analyses the implicatio

the human rights to privacy

the impact of significant te

the urgent need to further s

regulating these practices it

Report of the Spe promotion and pr

including the right to development

Human Rights Council

Twenty-third session

United Nations

political, economic, social and cultural rights

Agenda item 3 Promotion and protection of all human right

In this article we describe people's online in this article we describe people's online of practices in contexts in which the governme blocks access to or censors the Internet. We people experience blocking as confusing, as a for self-censorship online, as a cause of impove available content and as a real threat persecution. Challenging ideas of blocking as a abstract policy, we discuss five strategies Internet users navigate blocking: cultivating technical savvy, reliance on social

social media.

Human Factors

INTRODUCTION

social media-blogs, discu-

Author Keywords

ABSTRACT

blocked content, use of already blocked site

production as a form of protection

transparency. We also discuss strategies that

and blogging platform providers employ to d

avoid blocking. We conclude by advoca

research that acknowledges the complexity

in which all Internet users contribute to t

Internet censorship, blocking, motivatic

government, Internet non-use, Internet use

communities, social media, ethnography

K.4 [Computing Milieux] Computers

The Internet's very existence dep

Contributions of words, images, and v

[Information Systems and Presentation] N

ACM Classification Keywords

Online Contribution Engage in Interne

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CHI 2011 • Session: Inter-cultural Interaction

DIRECTORATE-GENERAL FOR EXTERNAL POLICIES POLICY DEPARTMENT

> Surveillance and censorship: The impact of technologies on human

sprere. Inis report argues that the human rights-based approach can be helpful in focusing discussions about security on individuals rather than states. It provides an example of contracting and communication at the research to the second state in the disks in the disks.

tocusing discussions about security on individuals rather than states, it provides an overview of countries and companies that pose risks to human rights in the digital and the second state and st

overview or countries and companies that pose risks to numan rights in the digital sphere. It lists the most relevant international laws and standards, technical standards to the standards of t sphere. It lists the most relevant international laws and standards, technical standards, business guidelines, internet principles and policy initiatives that have been crucial in economic who decompose violate economic to the decided economic to the deconomic to the decided economic to the deconomic to the decided economic to the decided e

business guidelines, internet principles and policy initiatives that have been crucial in transitioning the human rights regime to the digital sphere. It also analyses the immact of exercise ELE actions and the formation and human activity instance in small interna-

transitioning the human ngnts regime to the orginal sphere, it also analyses the impact of recent EU actions related to Internet and human rights issues. It concludes the state-state-state state state state state state state and states and st

Impact or recent EU actions related to Internet and human rights issues. It concludes that different elements of EU strategic policy on human rights and digital policy need to another the technologies have a model of the technologies have a model.

that different elements of LU strategic policy on human rights and digital policy field be better integrated and coordinated to ensure that technologies have a positive

be better integrated and coordinated to ensure that technologies have a positive impact on human rights. The report concludes that EU should promote digital rights in an animal logited stand of the third on untrained have also in the name divided digital rights.

impact on numan rights. The report concludes that EU should promote digital in national legislation of the third countries, but also in its own digital strategies.

As human lives transition online, so do human rights. The main challenge for the European Union and other actors is to transition all human rights to the digital subars this encode annual that the human rights have dependent on the head fill is and any subars to the subars of the head of the head fill is to be head fill in the head fill in the head fill is to be head fill in the head fill is to be head fill in the head fill in the head fill in the head fill is to be head fill in the head fill in the head fill in the head fill is to be head fill in the head fill in the head fill in the head fill is to be head fill in the head f European Union and other actors is to transition all human rights to the digital sphere. This report argues that the human rights-based approach can be helpful in

As human lives transition online, so do human rights. The main challenge for the

• Authorize actively! (Privacy controls)

• Communicate confidential (Encrypt your traffic)









 Authorize actively! (Privacy Controls)

 Communicate confidential (Encrypt your traffic)

• *Put your eggs into several baskets (Decentralization)*







Let's go "dark"!





Friend-to-Friend:

- Freedom from observation
- Resilient to censorship and sabotage

https://freenetproject.org/ https://dud.inf.tu-dresden.de/ Let's not give up on diversity (and privacy!) on the Web, just yet!

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