

ANALÝZA WEBOVÝCH DAT PRO UČITELE

webinar

Online setkávání
Metodický portál RVP.cz



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sports, music ▶ web development ▶ teaching English ▶ technology in education ▶ marketing research ▶ social media marketing ▶ economics ▶ data science & machine learning ▶ self-driven education ▶ social web mining ▶ computer science
▶ ethical hacking ▶ ... ▶ ∩ (not there yet =))



úvodem

děkuji za pozvání

snaha vytáhnout z témat,
kterým se věnuji, něco
“actionable” (bez nutnosti
předchozích
znalostí/zkušeností) pro
pedagogy

co byste se
v následujících 60min
chtěli dozvědět?
(neváhejte mě přerušit a
cokoliv volně diskutovat,
rozvíjet, ptát se, ...)

co stihneme
/co nestihneme

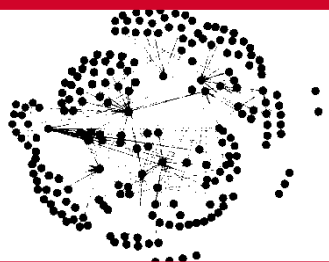


pohybujeme se uvnitř tematického celku věnovanému neformálnímu vzdělávání

otevřené vzdělávací zdroje	wikinomics	prosumers	long tail (/power law)
personalizace vzdělávání	content curation (učiteli /studenty)	analýza výukových výsledků	big data
21 st century education	sociální povaha technologií	connectivism	...



co mám připraveno



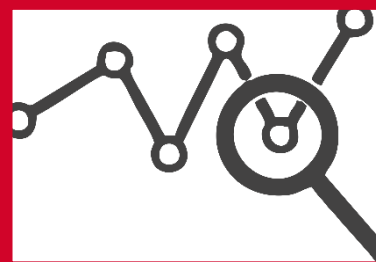
**the social web
research**



big data



**data o tvůrcích a
“spotřebitelích”
online
vzdělávacího
obsahu**



**“micro” úroveň
analýzy**



**recommender
systems
/algorithms**



diy





the social web research

**co to je a jak jej zasadit
do současného výzkumu?**

pro otázky typu:

kolik studentů má učitele rádo?

jaké jsou charakteristiky studentů, kteří mají dobré známky?

jak přispívá ICT gramotnost studenta k jeho samostatné vzdělávací aktivitě?

jaký je vztah mezi soustředěností studenta a jeho porozumění dané látce?

jak počáteční neúspěch studenta v daném předmětu ovlivňuje jeho vztah k tomuto předmětu v čase?

jak souvisí přehled v oblasti práva s přehledem v oblasti vzdělávání?

...



..., která získáme “klasickou” metodologií,

f2f/online
dotazník

data generovaná
uživatelé
vzdělávací
aplikace

(papírový
/elektronický)
test

interview

focus group

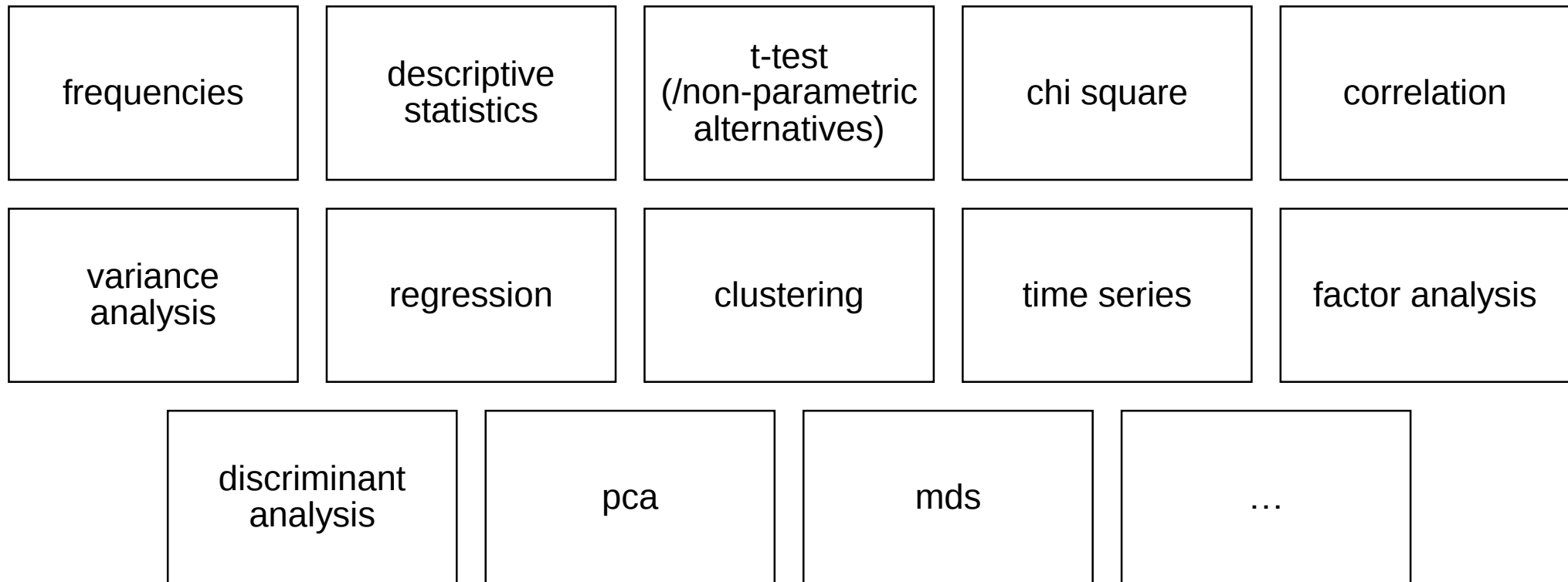
(ne)zúčastněné
pozorování

studium
dokumentů
(domácí úkoly,
výpisky, ...)

...



...umíme používat “tradiční” statistiku



dnes je ale “in” mluvit o:

data mining

data science

api

big data

semantic web

entity
resolution

collaborative
intelligence

social network
analysis

natural
language
processing

machine
learning

recommender
systems

deep learning

mapreduce

hadoop

spark

nosql

internet of
things

internet of me

virtual reality

cloud
computing

data security
and data
ownership

...



...což je navázáno (především) na velké množství “nových” polostrukturovaných a nestrukturovaných dat (a dostupný výpočetní výkon pro jejich zpracování)

network data	text (posty, články, maily, diskuzní fóra, ...)	(web)log	sensory data (platební karty, kamery, GPS, ...)	geodata
data z (nejen) mobilních zařízení	web crawling, web scraping, web automation	microdata	web cookies & sessions	click-through rate monitoring
	pattern recognition (image /video /sound /document recognition)	digital forensics & hacking (např. file metadata)	...	



všichni mohou těžit data například odsud (byť ne bez omezení):



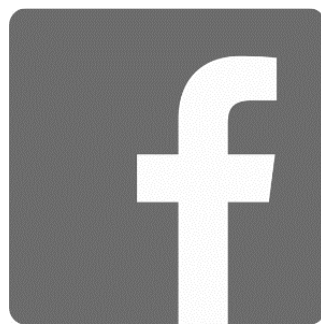
the internet

about 3 billion users
about 1 billion
websites
the top 500 sites on
the web (according to
the Internet traffic)
including all services
studied in this
research



blogs

more than 6.7 million
bloggers
about 80% of internet
users read blogs



facebook

about 1.3 billion
monthly active users
about 80% of daily
active users outside
the US & Canada
more than 50 million
facebook pages



twitter

255 million monthly
active users
about 77% of
accounts
outside the US
about 500 million
tweets per day



google+

540 million monthly
active users
about 5.5 million
pages*

* a simple estimate based on
Google's statement that more
than 1 million pages were
created in the first 6 months
(g+ launched in November
2011)



....nebo odsud:



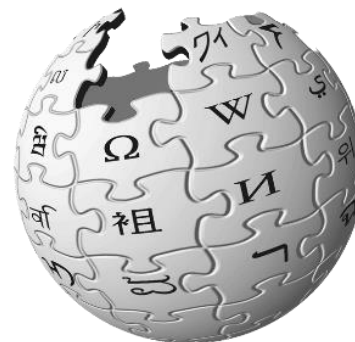
youtube

more than 1 billion users
80% youtube traffic
outside the US
100 hours of video
uploaded every minute



reddit

about 115 million
monthly unique visitors
largest demographic
group of 18-29 year old
males



wikipedia

over 500 million monthly
unique visitors
over 4.5 English articles
over 10 edits/sec of
wikipedia
& its sister projects



google

3.5 billion searches per
day (1.2 trillion searches
per year worldwide)
65.2% share of web
search volume
worldwide (2013)*

* any moderate growth differential of
Google's competitors doesn't impact
Google's global leadership in any
significant way



the social web

SOCIAL MEDIA IN PUBLIC OPINION RESEARCH: REPORT OF THE AAPOR TASK FORCE ON EMERGING TECHNOLOGIES IN PUBLIC OPINION RESEARCH. AAPOR. 2014 [Retrieved 2014-16-11]. http://www.aapor.org/Social_Media_Task_Force_Report.htm

RUSSELL, Matthew A. MINING THE SOCIAL WEB: DATA MINING FACEBOOK, TWITTER, LINKEDIN, GOOGLE , GITHUB, AND MORE. 2nd ed. Sebastopol: O'Reilly, 2014. ISBN 978-1-449-36761-9.

BERNERS-LEE, Tim. WEAVING THE WEB: THE ORIGINAL DESIGN AND ULTIMATE DESTINY OF THE WORLD WIDE WEB BY ITS INVENTOR. San Francisco: Harper Business, 2000. ISBN 006251587X.

HILL, Craig A., Elizabeth DEAN and Joe MURPHY. SOCIAL MEDIA, SOCIALITY, AND SURVEY RESEARCH. ISBN 978-1-118-37973-8.

Social network analysis. Wikipedia: the free encyclopedia [online]. Wikimedia Foundation, 2001-2015 [Retrieved 2015-08-18]. https://en.wikipedia.org/wiki/Social_network_analysis

social network analysis

a strategy for investigating social structures through the use of network and graph theories

social media

the collection of websites and web-based systems that allow for mass interaction, conversation, and sharing among members of a network

social web

an online graph of people, activities, events or any other entities

“I designed it for a social effect—to help people work together—and not as a technical toy. The ultimate goal of the Web is to support and improve our weblike existence in the world. We clump into families, associations, and companies. We develop trust across the miles and distrust around the corner.”

Tim Berners-Lee



educational data mining

learning analytics a
adaptive learning (apod.)
jsou zaměřeny na studijní
výsledky jednoho
studenta

změna se tedy zdá být
“pouze” v okamžité
dostupnosti a rychlosti
šíření informací, nikoliv v
samotném procesu
vzdělávání

chceme sledovat
vzájemné vztahy namísto
izolovaného jednotlivce;
zároveň napříč
platformami a s větším
důrazem na proces

webová data se nám
přímo vnucují, jelikož se
zaznamenávají “sama”
a žáci na sociálních
médiích už dávno jsou



the social web research (emerging) methodology

RUZICKA, Jakub. HOW TO CREATE SELF-DRIVEN EDUCATION: THE SOCIAL WEB & SOCIAL SCIENCES, COURSERA & KHAN ACADEMY 2014 CASE STUDY. Prague, Czech Republic, 2015.
Diploma Thesis (Mgr.), Charles University in Prague, Faculty of Social Sciences, Institute of Sociological Studies. Supervisor: Ing. Mgr. Jiří Remr, Ph.D., MBA.
<https://is.cuni.cz/webapps/rrn/detail/134477>

strengths

- exploratory research, hypotheses creation
- low-cost worldwide, longitudinal, and/or automated research
- the social web research in social sciences as a (generally) non-intrusive observation and/or a study of documents that brings a lot of new (rather) easily accessible (usually) unstructured data
- observing "natural interactions" (as opposed to people aware of being subject to a research) possibly reducing biases due to a research instruments' features
- the importance of the Internet as a source of information (also for rather "passive" online population)
- "archivation" and/or "recoverability" of the social web data facilitating validation of a research

weaknesses

- limited (/under-researched) offline behavior implications, generalizations over a population/community, actual behavior, or other environments
- online population and active users only
- difficulty of assessing reliability of the social web research because of lack of standards, little mixed research design studies, and the immaturity of the social web research methodology
- the "hype bias" – the overall web collective intelligence exhibiting extremes

opportunities

- complementing (mixed research design) - in relevant cases possibly substituting - the traditional social scientific research
- information diffusion research
- the development of digital literacy as an appropriate strategy with regard to the increasing importance of the social web data
- pattern recognition, machine learning, recommender systems, processing of large data sets, the semantic web data, the Internet of things data
- "time proving" the most reliable outcomes of the social web research
- self-regulation of the social web mining community setting professional standards
- the educational value of the (easily accessible) social web data: practice of "real-world" analytical /programming /decision-making /(...) skills

threats

- omitting the overall social web landscape and its relations to the offline world (focusing on a narrow range of media)
- time frame bias of a study
- specific populations / communities discoverable via qualitative insight only and/or "invisible" populations / communities
- omitting web/screen scraping, i.e. not obtaining "hidden" textual but also non-textual data that are not available via a specific service's API
- bots, spam, users "paid to post"
- the ethical issue of how to deal with publicly available information of (generally) uninformed users, where regulatory ethics is lagging behind and where a service's business model is often tied to the provision of the available user data
- the "reverse engineering" process of revealing one's true identity despite data aggregation & anonymization



big data

co to je? a potrebujú to?

co jsou to “velká data” (nejen) ve vzdělávání?

data, která nemůžu najednou
načíst do paměti?

data z mnoha různých zdrojů
o konkrétní entitě? (např.
studentovi)

data, pro jejichž analýzu je
nezbytná automatizace?

těžko říct, ale určitě nám v
budoucnu bude scházet
(minimálně) bambilion data
scientists, kteří ovládají
hadoop?

Gartner Hype Cycle:
obecně, pro rok 2015

...



MOOC providers “big data” využijí

problematický okruh
/výukový blok, častá
chyba v testech
/projektech

“real-time” monitoring
vzdělávacího procesu

“hromadný feedback”,
analýza sentimentu,
návrhy na zlepšení, ...

logic /semantic
reasoners
(například pro organizaci
vzdělávacího obsahu a
automatizaci evaluace
studentů)

...



ale taková data “offline” instituce a/nebo učitelé většinou (zatím?) nemají

...a hlavně pro svou práci analyzovat
“big data” nepotřebují
stíhali by(chom) to vůbec? =)

stačí jejich zajímavé fragmenty

...které by měly pomoci žákům
/studentům i učitelům

“velcí hráči” nám (anonymizovaná)
behaviorální data neposkytují

nicméně, máme přístup k datům
z online světa kolem nich

ve finále navíc nechceme měřit
počet kliknutí na vzdělávací obsah,
počet správných odpovědí, atp.
a především nechceme být omezeni
jednou platformou
(pěkná keynote poslední PyData
konference)



v ideálním světě (v duchu současného trendu) by učitelé měli k dispozici například tyto specialisty :

education
engineer

education
scientist

content
architect

course
developer

...
(zpět
do reality =))

...jaké big data
“fragmenty”
mám na mysli?



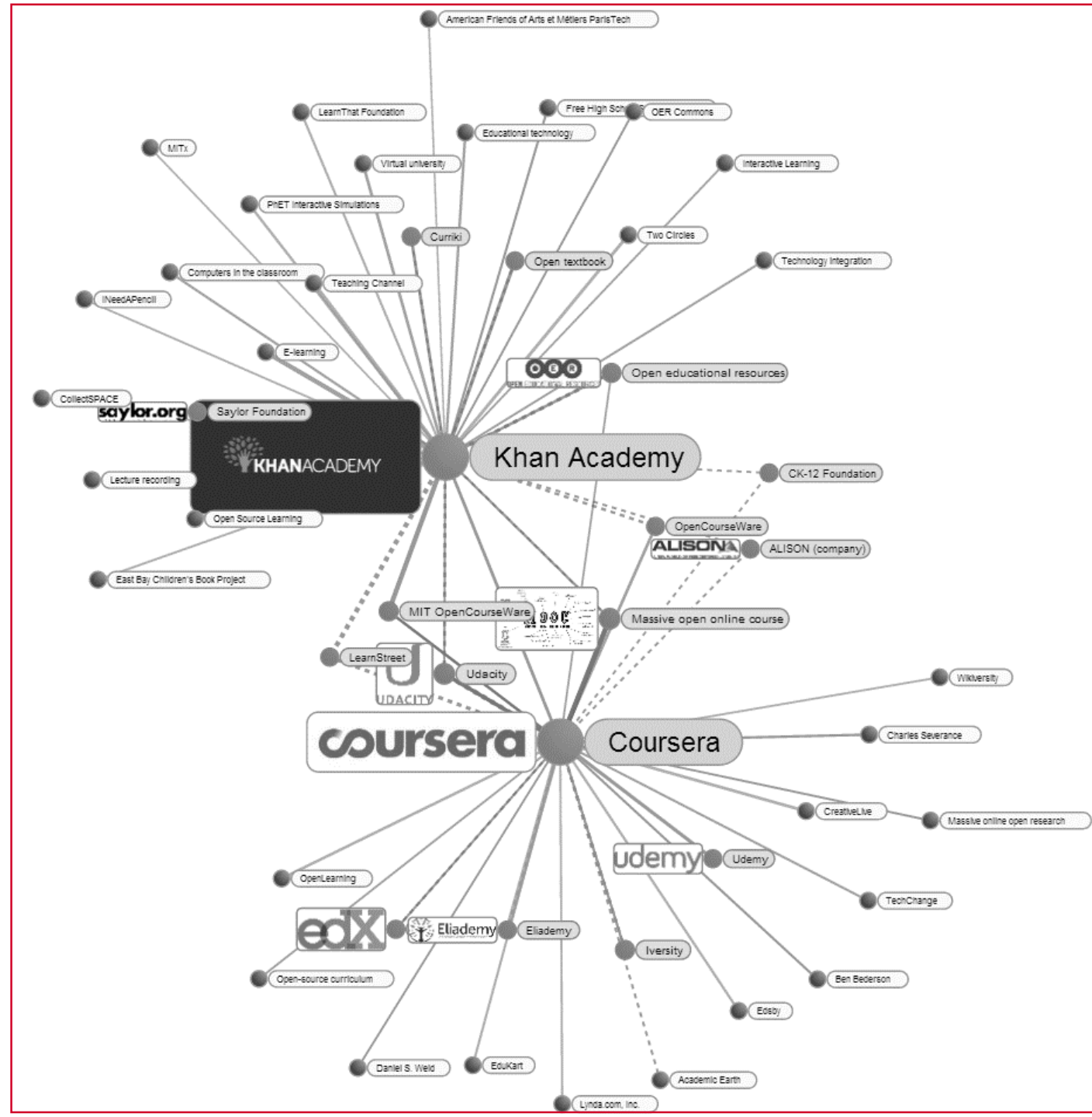


data o tvůrcích a “spotřebitelích” online vzdělávacího obsahu

v jakých sítích se nachází? proč se o něm mluví? kdo o něm mluví? jak o něm mluví? odkud jsou? jaká je jejich motivace? proč s tvůrcem udržují kontakt? jací členové komunity jsou vlivní? o kom mluví tvůrce obsahu? jaký obsah funguje? na čem naopak zapracovat? a lze z toho vyvodit nějaké obecné principy?

(jednoduché analýzy bez modelování dat)

wikipedia insights

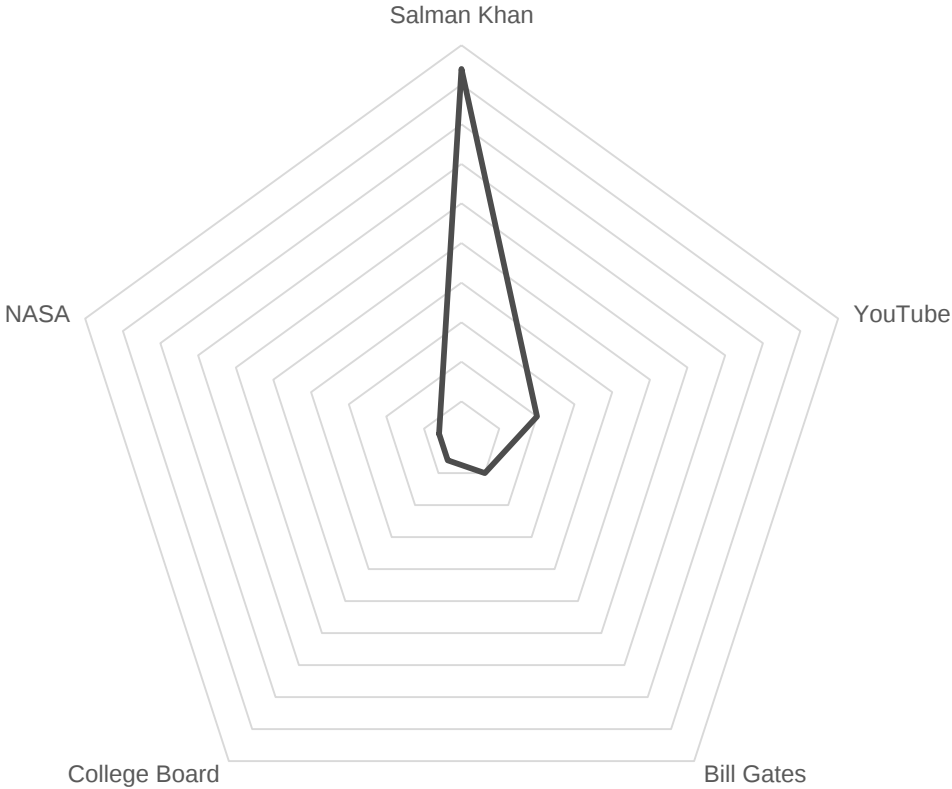
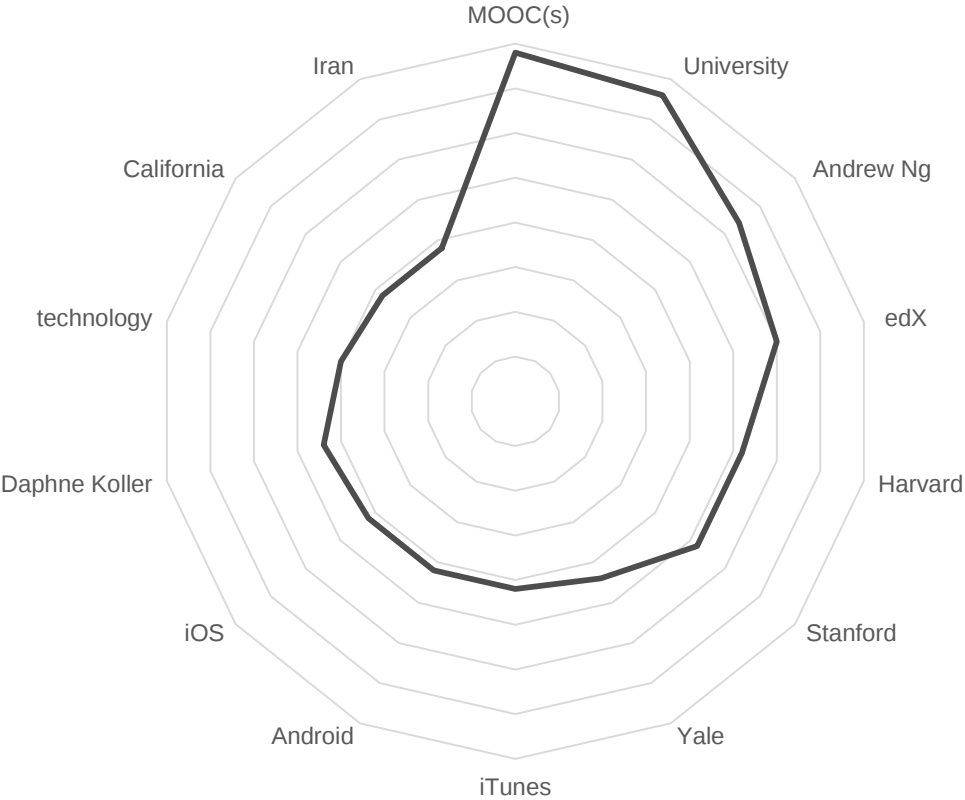


total news articles: 28 (2012-2014)

named entity recognition



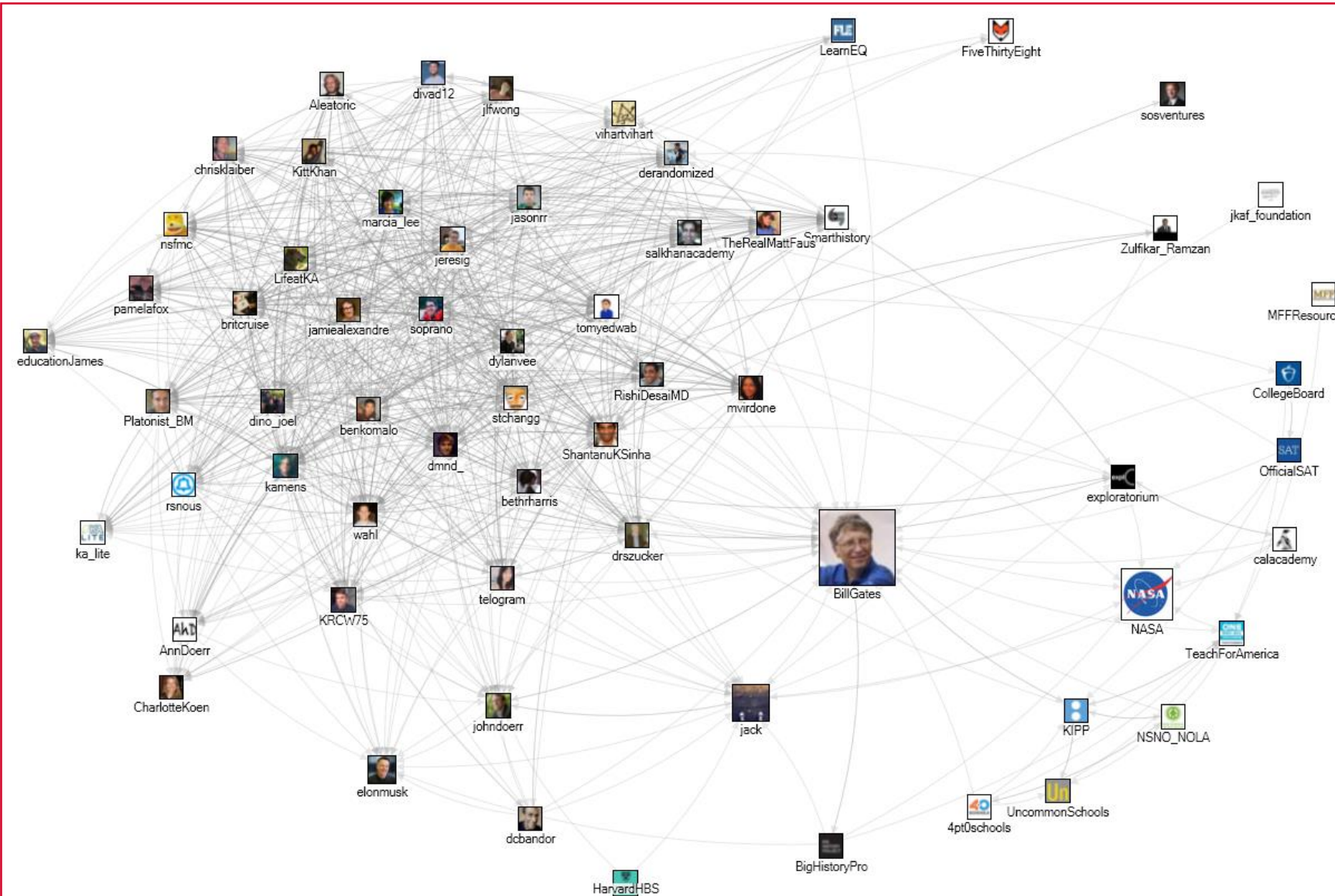
total news articles: 104 (2009-2014)



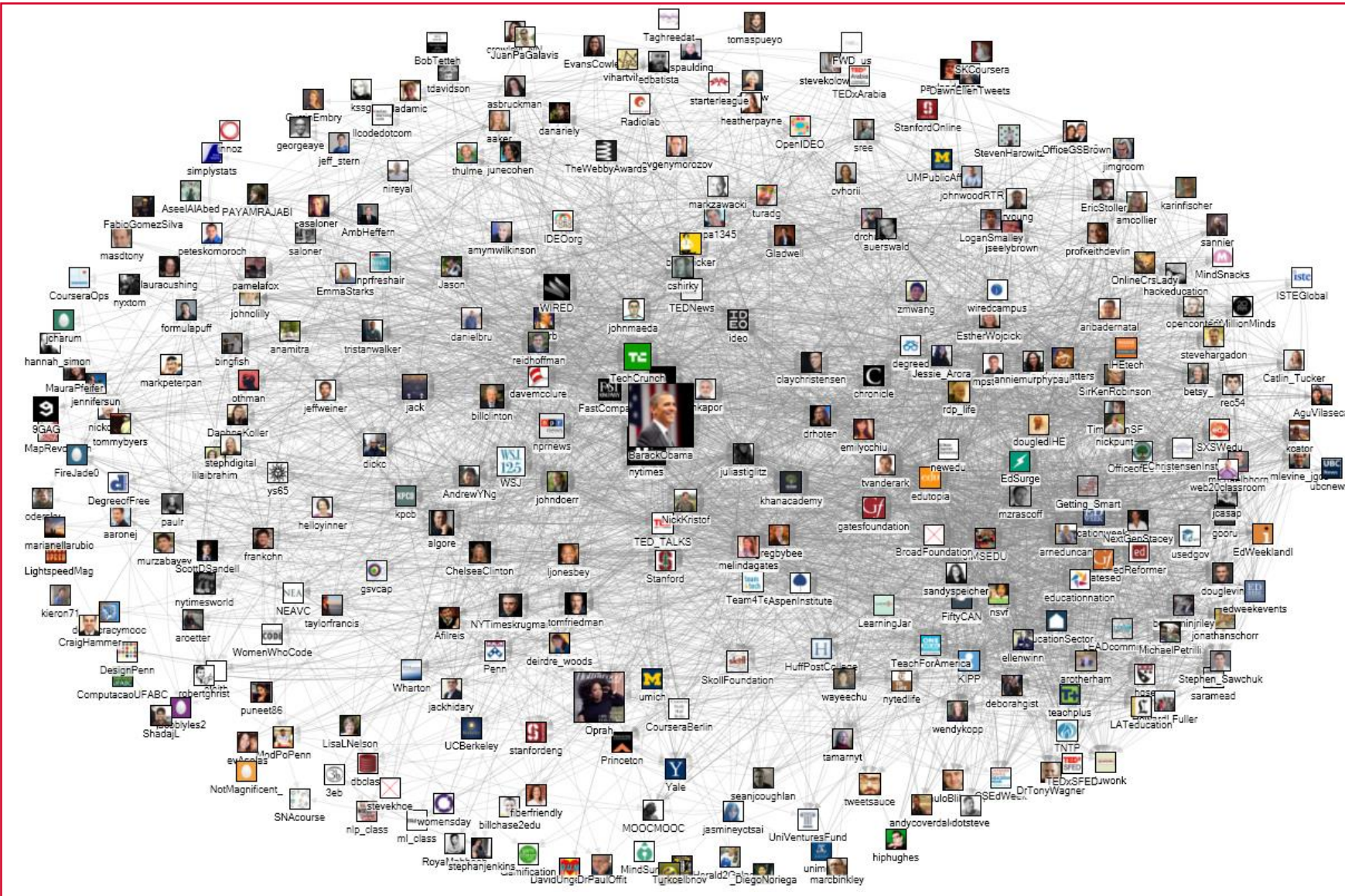
following/friends network



following: 63



metric: number of followers; N=63



reshares top 3



coursera

followers: 1,067,922



Coursera

Shared publicly - 5 Apr 2014

#MahatmaGandhi

"Live as if you were to die tomorrow. Learn as if you were to live forever." - Mahatma Gandhi

+1987

246



Coursera

Shared publicly - 24 May 2014

"Yesterday was a very emotional day for a lot of us at Coursera. We got to meet Dan Bergmann, an autistic student who completed over 7 college level courses on Coursera, in-person. Dan was in special education all his life because he had limited speaking vocabulary. But on the Coursera platform, he can watch lectures at his own pace and communicate through typing at a college level. As a result, a learner who was placed in the remedial learning track has taken and excelled at advanced level poetry and history courses...AND has been invited by a UPenn professor to be a Community Teaching Assistant. We are incredibly motivated by Dan so much so that we painted him on one of our conference room walls.

It was priceless for us to see his giddy reaction when he saw his own portrait. Dan, you make us as a company (and as individuals) better through the example you set in love for learning and perseverance.

This is why I work at Coursera."

Read Daniel's story: <http://bit.ly/1tv6IRU>



+923

177



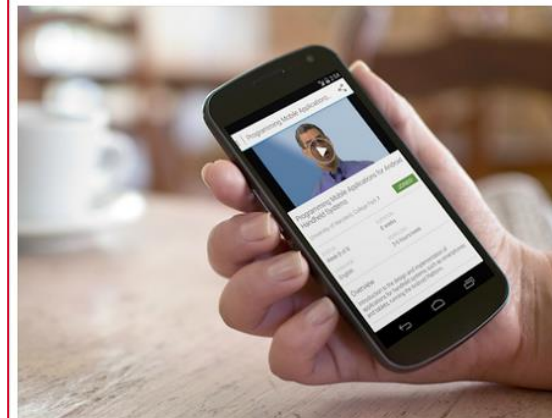
Coursera

Shared publicly - 16 Mar 2014

Android users: we need your help—become a Beta Tester!

Apply here: <http://ow.ly/uDQNJ>

Your feedback on our (future) mobile app will impact millions of students. Thank you for participating!



+507

100



replies top 3



followers: 343,686



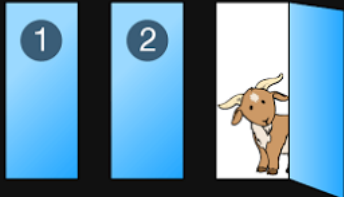
Khan Academy

Shared publicly · 9 May 2014

#Puzzle

Let's make a deal! Can you solve this week's brain teaser?
Sal gives the answer here: <http://ow.ly/wDWD3>

Suppose you're on a game show, and you're given the choice of three doors: Behind one door is a car; behind the others, goats. You pick a door, say No. 1, and the host, who knows what's behind the doors, opens another door, say No. 3, which has a goat. He then says to you, "Do you want to pick door No. 2?" **Should you switch your choice?**



+ 231

53



217 replies



Khan Academy

Shared publicly · 14 Mar 2014

#PiDay

Happy Pi Day, it's 3/14 1:59 in NYC!

How many digits can you remember in the number pi? Write them below, and no cheating/Googling!

Photo of "Pi in the Sky" over Austin by Sarah Dieken: <http://bit.ly/1eAymK>



+ 307

26



191 replies



Khan Academy

Shared publicly · 23 May 2014

Can you solve this week's brain teaser?

There are two doors, each with a guard. Behind one door is treasure. Both guards know which door hides the treasure, but one guard always lies and one always tells the truth. You can ask one guard a single question. What do you ask?

Sal gives the answer here: <http://bit.ly/1i4Y3ZL>



+ 305

69



181 replies



comments top 3

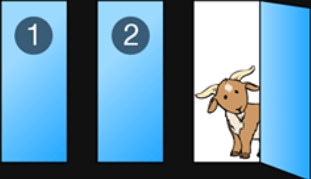


number of fans: 714,626

Khan Academy May 9 · 🌐

Let's make a deal! Can you solve this week's brain teaser?
Sal gives the answer here: <http://ow.ly/wDWD3>

Suppose you're on a game show, and you're given the choice of three doors: Behind one door is a car; behind the others, goats. You pick a door, say No. 1, and the host, who knows what's behind the doors, opens another door, say No. 3, which has a goat. He then says to you, "Do you want to pick door No. 2?" **Should you switch your choice?**



Like · Comment · Share

👍 1,813 people like this. [Top Comments](#)

↗ 653 shares

824 comments

Khan Academy May 23 · 🌐

Can you solve this week's brain teaser?

There are two doors, each with a guard. Behind one door is treasure. Both guards know which door hides the treasure, but one guard always lies and one always tells the truth. You can ask one guard a single question. What do you ask?

Sal gives the answer here: <http://bit.ly/1i4Y3ZL>



Like · Comment · Share

👍 2,590 people like this. [Top Comments](#)

↗ 992 shares

737 comments

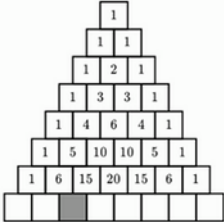
Khan Academy March 12 · 🌐

Pascal's Triangle and the Binomial Theorem

Solve this week's challenge! What is the shaded square in Pascal's Triangle? Now find the corresponding term in the expansion below.

Try out the skill at: <http://ow.ly/uukDW>

Fill in the shaded square in the last row of Pascal's Triangle, and use this to find the corresponding term in the expansion of $\left(u^3 + \frac{1}{w}\right)^7$.



The number in the shaded square is

The corresponding term in the expansion of $\left(u^3 + \frac{1}{w}\right)^7$ is

Like · Comment · Share

👍 901 people like this.

↗ 459 shares

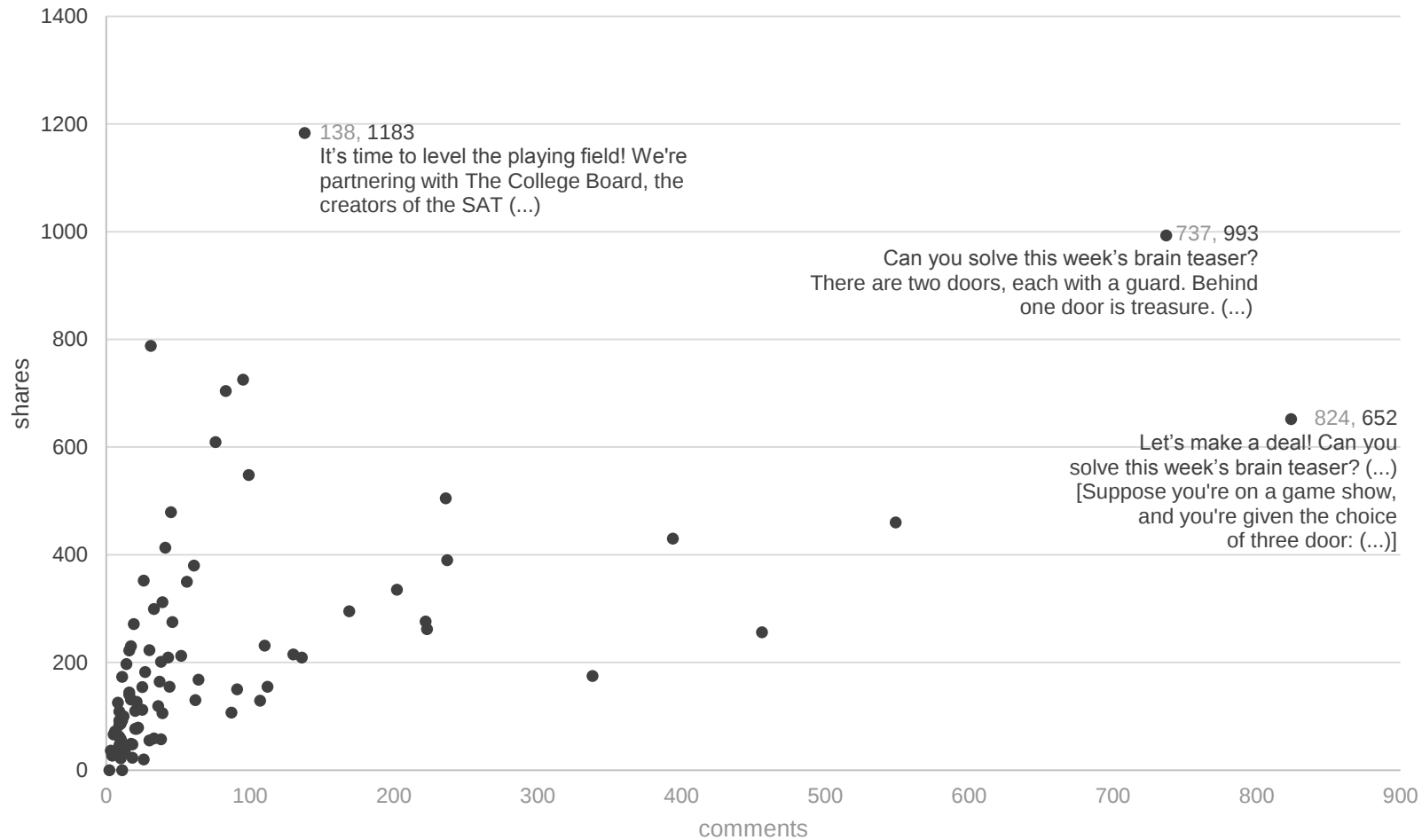
549 comments



shares & comments outliers



total posts: 92



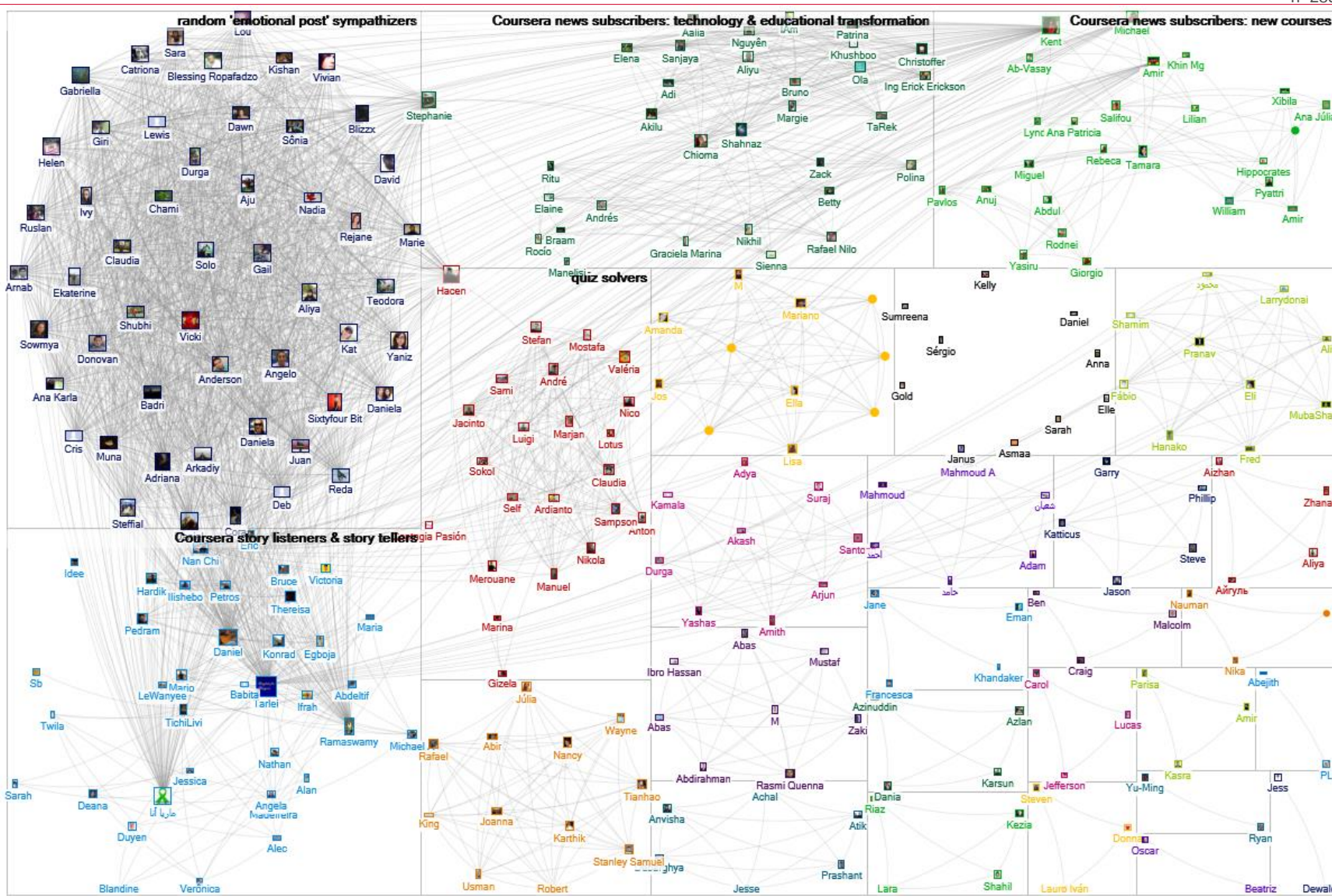
comment network



coursera

number of fans: 529,115

n=285



metric: degree; n=285

group	vertices	edges
random 'emotional post' sympathizers	52	1326
Coursera story listeners & story tellers	37	186
Coursera news subscribers: technology & educational transformation	32	229
Coursera news subscribers: new courses	25	87
quiz solvers	23	162



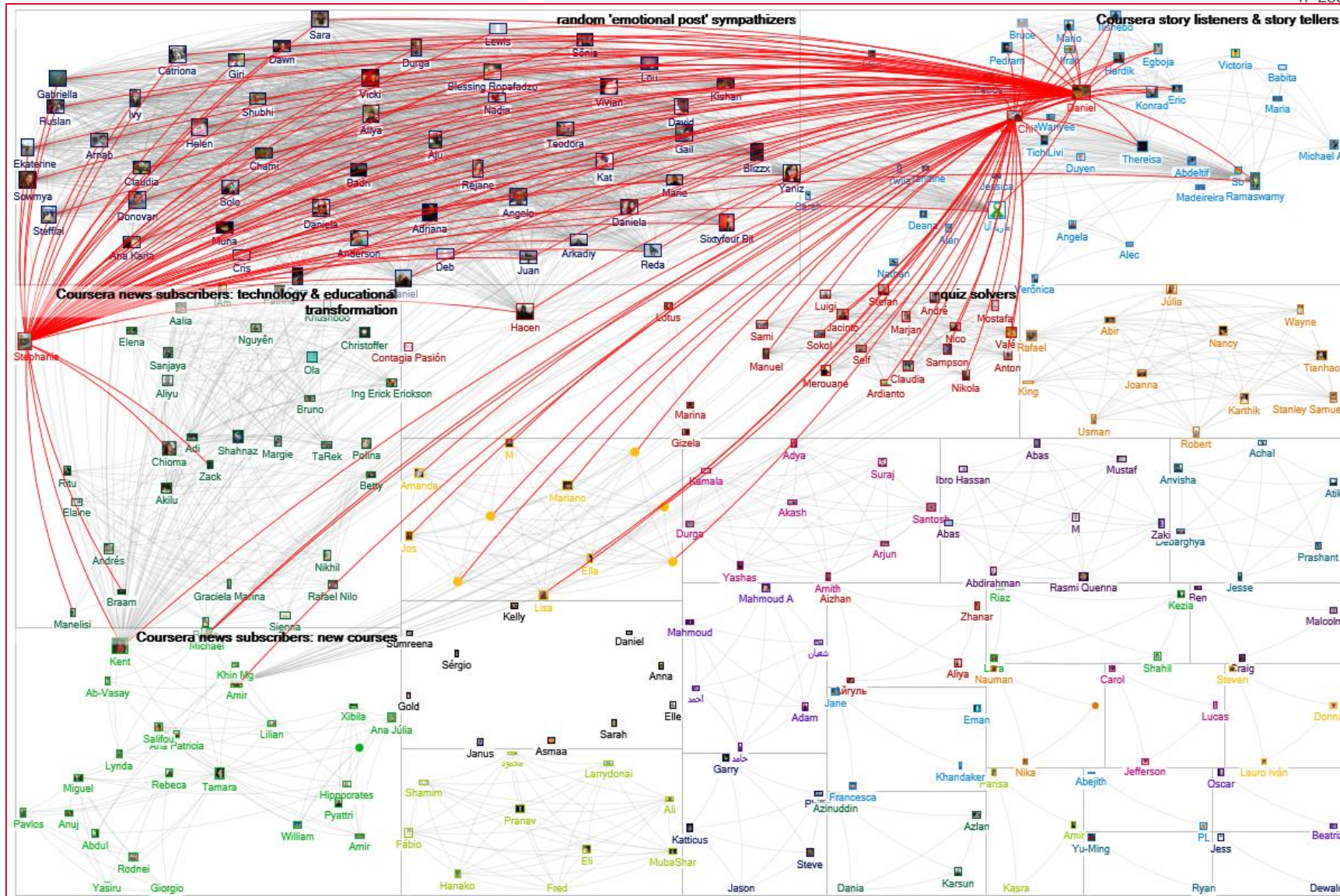
comment network



coursera

number of fans: 529,115

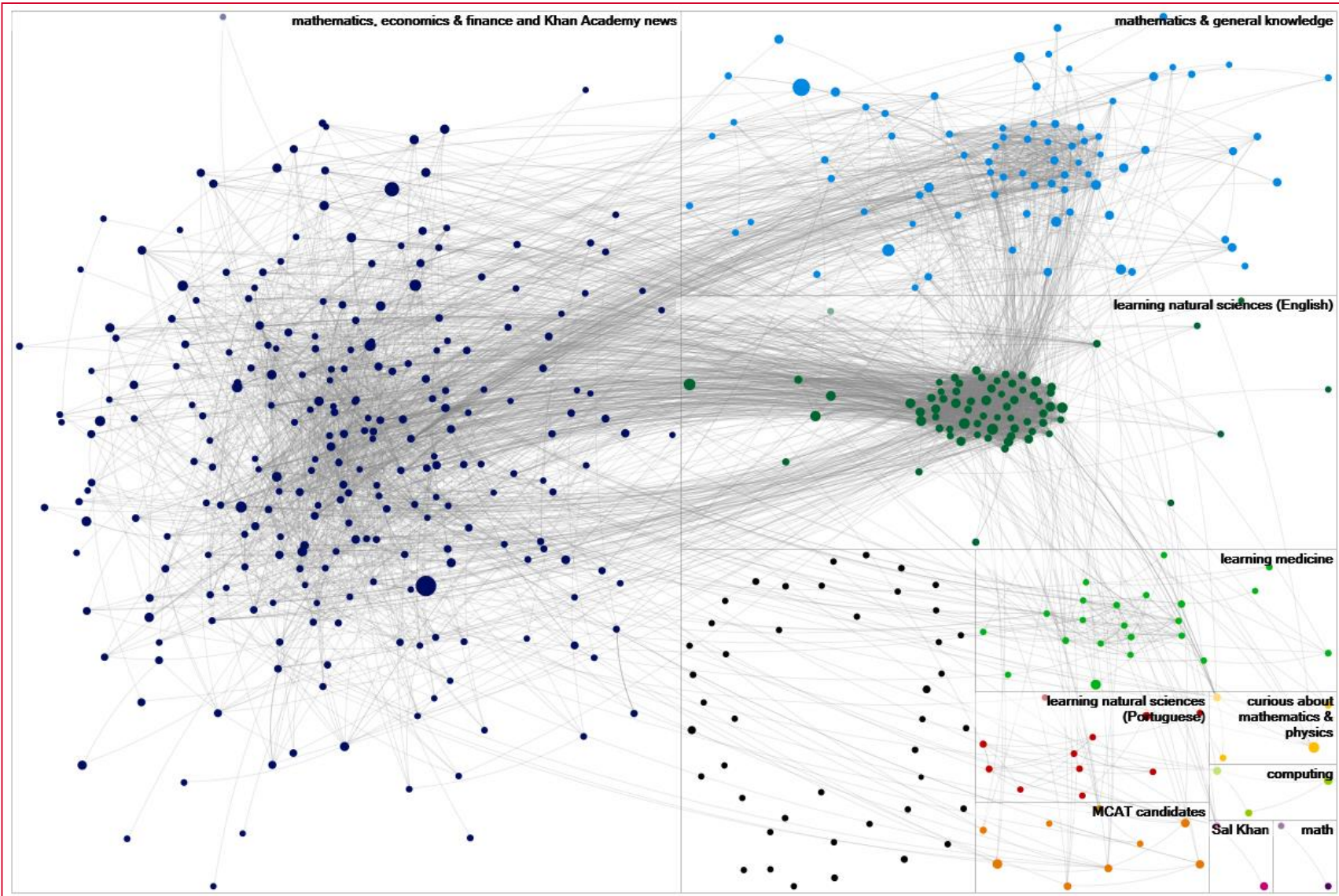
n=285

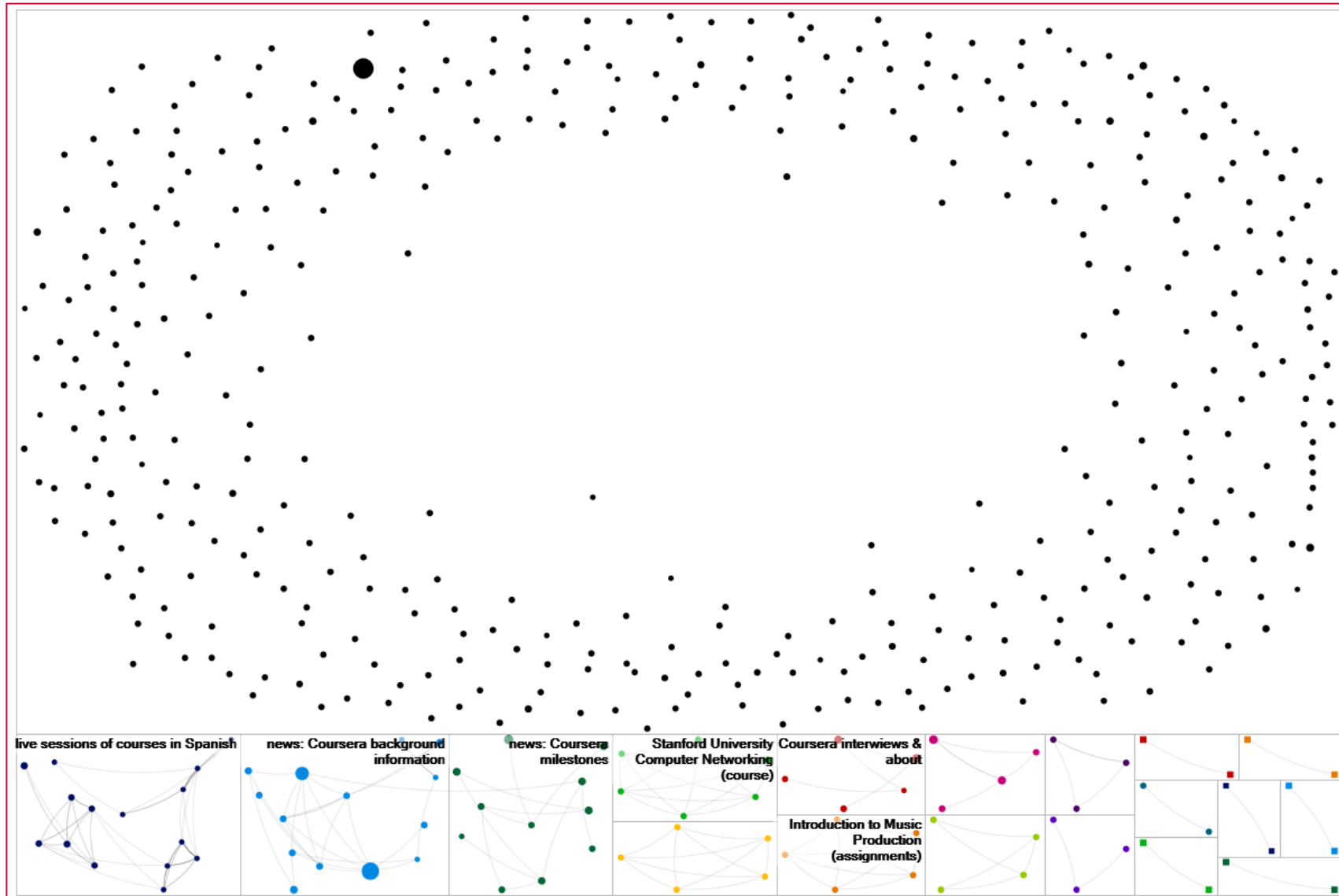


metric: degree; n=285

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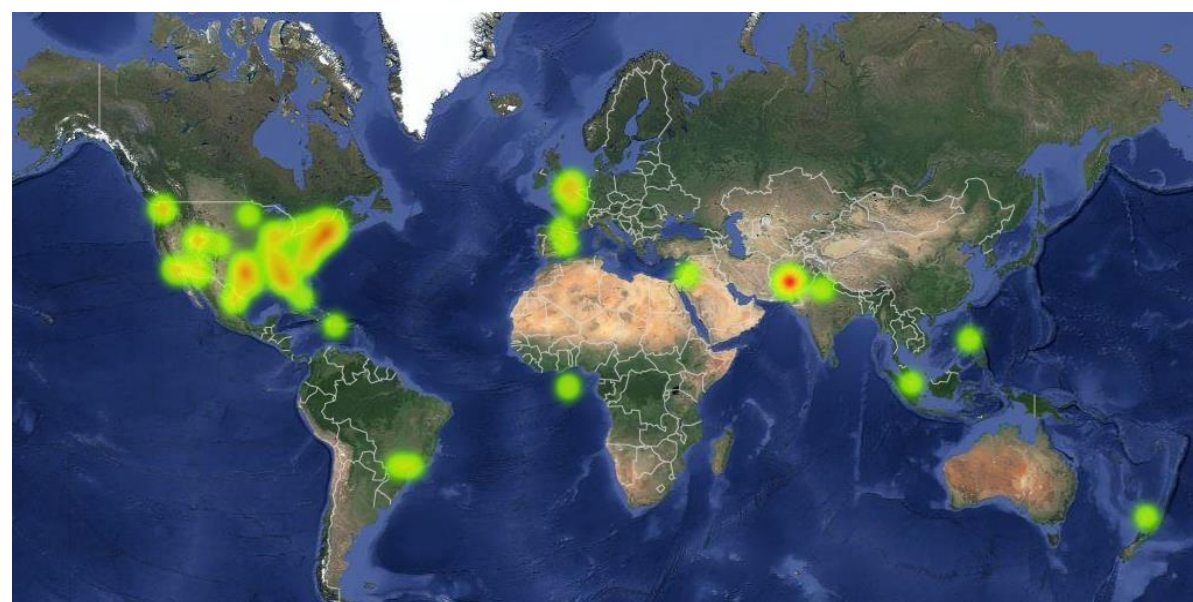
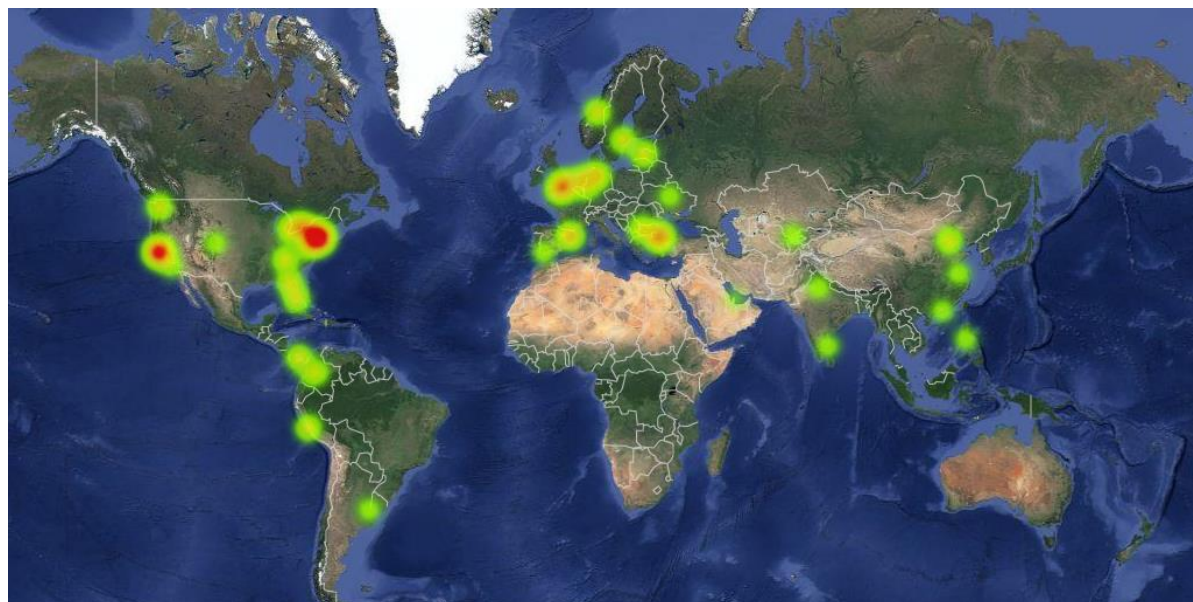




number of tweets: 8,538



number of tweets: 4,976





number of tweets: 8,538

top keywords	Porter stemmer (top)	Wordnet lemmatizer (top)
coursera	coursera	coursera
course(s)	cours	course
free	sign	free
online	mooc	online
mooc	free	signed
learn(ing)	learn	mooc
signed	onlin	learning
programming	start	class
data	educ	programming
education	take	data
earn(ed)	class	learn
university	univers	

part-of-speech tags	
top verbs	sign(ed) earn(ed) take learn
top adjectives	free learn free new more first great good mobile english

Coursera represents “free”, “online”, “mooc”, “education(al)” platform offering “new” courses from world’s top “universities”, mainly in “english”. People usually talk about what you can “learn” there, which courses (“class(es)”) “start” soon, which courses you can “sign” up, which “course” they (have) “take(n)” (or “signed” up for), whether it is their “first” Coursera experience, or where you can find “more” information or “more” educational resources from “coursera”. People like to tell others what is the percentage of points they “earn(ed)”, and whether they received a certificate from the “sign(ature)” track. Especially, people talk about courses concerning “programming” & “data”. The course experience & the “free” “education” “coursera” offers is “good” or even “great”. So is the fact that the “education” provided by “coursera” is now also “mobile”.*



a week of tweets



coursera

number of tweets: 8,538

average sentiment **0.14**

average sentiment,
neutral (0) removed **0.30**



sentiment	(detected language) original tweet	analyzed tweet [automatic translation, processed]
1	(en) Here's a start on @coursera etc @ Summer of Learning! @ pulls together best online courses - http://t.co/0Fq07j2ZwM	heres a start on coursera etc timf5050 summer of learning lifehacker pulls together best online courses
1	(en) @ are you teaching any MOOCs this summer? Your Coursera course was the best yet!	are you teaching any moocs this summer your coursera course was the best yet
1	(en) Professor you've made my transition into bschool a cake walk. Best course I've ever taken.Huge fan of your novel approach	professor youve made my transition into bschool a cake walk best course ive ever takenhuge fan of your novel approach
1	(nl) En ook MIT heeft een online university. Doe! vrije tijd: http://t.co/dwgViu9uN3 & http://t.co/WSy1eHIBM1 #awesome	and mit has an online university bye leisure & awesome
1	(en) @ Should study Khan Academy, Coursera and Udacity as role models of MOOCs, adopt best practices @ @	should study khan academy coursera and udacity as role models of moocs adopt best practices
1	(en) that class that you mention from coursera economics of money and banking is excellent thank you	that class that you mention from coursera economics of money and banking is excellent thank you
1	(ja) #Coursera #posa-002 Week 1の結果は満点で無事に完了! 結構長かった。 #3good	results of coursera posa002 week 1 was longer quite done safely in a perfect score 3good
1	(ar) من يمكنكم التي العالمية المواقع بأفضل قائمة إليكم	heres a list of the best sites you may feel that the world of
1	(en) Your beliefs draw your behaviors and your behaviors determine outcomes!! Just completed Week 2 of awesome learning @coursera!	your beliefs draw your behaviors and your behaviors determine outcomes just completed week 2 of awesome learning coursera
1	(ru) По теории Графов лучше всего подходят курсы стенфордского университета на Coursera #yacm2014	on graph theory are best courses at stanford university on coursera yacm2014
1	(en) Completed an excellent course in Machine Learning by @andrewng on @Coursera! https://t.co/OfawjBUIj	completed an excellent course in machine learning by andrewng on coursera
1	(en) coursera is awesome	coursera is awesome
1	(en) @drchuck reading your book for the coursera MOOC. It's awesome!!!	reading your book for the coursera mooc its awesome
1	(en) Listening to Rick Levin, CEO of Coursera. Very impressive!	listening to rick levin ceo of coursera very impressive
1	(en) @coursera @BerkleeCollege Oh my gosh, that was AWESOME!	coursera berkleecollege oh my gosh that was awesome
1	(en) I found the perfect class for me. I'm geeking out in anticipation. https://t.co/VaebXhoqLV	i found the perfect class for me im geeking out in anticipation



a week of tweets

coursera

number of tweets: 8,538



sentiment	(detected language) original tweet	analyzed tweet [automatic translation, processed]
1	(en) Excellent suite of basics on Data Analysis https://t.co/LOeoGRh4N9 #MOOC	excellent suite of basics on data analysis mooc
1	(en) awesome course! https://t.co/wdenaGtRSb	awesome course
1	(tr) Dünyanın en iyi üniversitelerinden dersler, Türkçe altyazı ile @TurkcellAkademi'de.. http://t.co/pgllqoAjvF	lessons from the best universities in the world with turkish subtitles in turkcellakademi
1	(en) @ I need to sign up to even look at the course details. I've heard of coursera though. Best of luck, I can't take up any course now.	i need to sign up to even look at the course details ive heard of coursera though best of luck i cant take up any course now
1	(en) My online course is called Paradoxes of War. This is going to be awesome. #Coursera #princeton	my online course is called paradoxes of war this is going to be awesome coursera princeton
1	(en) Excellent News http://t.co/wdpxXRlZ7X	excellent news
1	(en) This site is awesome https://t.co/diuZtu5Jms dunno about the classes yet though but signed up for one to start this week :-)	this site is awesome dunno about the classes yet though but signed up for one to start this week
1	(en) The Best MOOC Provider: A Review of Coursera, Udacity and Edx - http://t.co/ENDu5MJfFK http://t.co/3ht3jcANcA	the best mooc provider a review of coursera udacity and edx
1	(en) "Aggregation is 'link to the rest', where Curation is 'link to the best'": Understand Google, Northwestern University coursera lec :)	aggregation is link to the rest where curation is link to the best understand google northwestern university coursera lec
1	(en) @drchuck reading your book for the coursera MOOC. It's awesome!!!	drchuck reading your book for the coursera mooc its awesome
1	(en) The Best MOOC Provider: A Review of Coursera, Udacity and Edx - http://t.co/ENDu5MJfFK http://t.co/3ht3jcANcA via @skilledup	the best mooc provider a review of coursera udacity and edx via skilledup
1	(es) Las mejores ... - http://t.co/CBr8RavZAu #Coursera #Cursos #Duolingo #Nasa #Udemy http://t.co/bK6FvkCNcQ	best coursera courses nasa udemy duolingo
1	(es) Las mejores #Aplicaciones ... -- http://t.co/0gH3naXrCE #RecetasNaturale #Coursera #Cursos #Duolingo #NASA #UDEMY	best applications recetasnaturale tco0gh3naxrce courses duolingo coursera nasa udemy
1	(es) Las mejores aplicaciones para no dejar de aprender aún siendo adultos #ANDROIDE #Tecnologia #Udemy #Coursera #NA... http://t.co/TxyaG5Vk0T	the best applications for non stop learning even as adults android technology udemy coursera na
1	(es) Las mejores aplicaciones para no dejar de aprender aún siendo adultos: A medida que nos hacemos... http://t.co/bNC1BSpQyx #Udemy #coursera	the best applications for non stop learning even as adults as we grow udemy coursera
1	(es) RT @: Después de un 10 en Semana 1, estoy listísima para Semana 2 <3 #TCGO @coursera @UniLeiden	after a 10 on week 1 im listsima for week 2 < 3 tcgo unileiden coursera
1	(en) @ Best of luck on your @Coursera journey. Follow @DukeU for updates on Duke news, research and campus life.	best of luck on your coursera journey follow dukeu for updates on duke news research and campus life
1	(tr) @Turkcell @coursera mükemmel bir çalışma teşekkürler	turkcell courser calma the perfect thank you
1	(ru) Друзья ЛЕГЕНДАРНАЯ новость, для желающих познать финансы. На Coursera вышел ...	friends legendary news for those wishing to learn finance coursera went on
1	(es) Una vez más empiezo esta maravilla de curso en Coursera, y una vez más me veo abandonándolo por falta de tiempo :_(https://t.co/FpnrJM5aIL	again start this wonderful coursera course and once again i see myself abandoning it for lack of time
1	(en) @: One if the best for #datacomputing Heard of @Coursera courses? We have them at the @JohnsHopkinsSPH. Explore #gohop http://t.co/3ht3jcANcA	one if the best for datacomputing heard of coursera courses we have them at the johnshopkinssph explore gohop



a week of tweets



coursera

number of tweets: 8,538



sentiment	(detected language) original tweet	analyzed tweet [automatic translation, processed]
1	(tr) Turkcell Akademi ve Coursera işbirliği ile dünyanın bilgisi Türkçe: ABD'nin en iyi üniversitelerinden dünyaca ... http://t.co/9lJjXfQrr	turkcell academy in collaboration with the worlds information and courser turkish usa s of the best universities in the world
1	(tr) Turkcell Akademi ve Coursera işbirliği ile dünyanın bilgisi Türkçe: ABD'nin en iyi üniversitelerinden dünyaca ... http://t.co/qH3ttSNN64	turkcell academy in collaboration with the worlds information and courser turkish usa the world s best universities
1	(it) @ @ C'e' un eccellente @coursera MOOC https://t.co/VciPCU4qmz esplora il peso/ % di compiti in un corso e conseguenze.	there s an excellent coursera mooc explores the weight of tasks in a course and consequences
1	(en) @: @ Just finished the R Programming course on @coursera. Excellent use of time." I am also almost done.	just finished the r programming course on coursera excellent use of time i am also almost done
1	(gl) Suscríbete a este curso para aprender a programar Programming for Everybody Coursera https://t.co/xwJI4pRxuJ via @delicious	suscríbete to this course to learn how to program programming for everybody course via delicious
1	(en) Awesome @geranyl: Stanford's Machine Learning on @Coursera starts soon! https://t.co/f0gVkoLpbz	awesome stanfords machine learning on coursera starts soon
1	(en) @ Just finished the R Programming course on @coursera. Excellent use of time.	just finished the r programming course on coursera excellent use of time
1	(en) Weekends appear to be the perfect time to catch up on @coursera lectures and assignments before Sunday deadlines.#MOOC	weekends appear to be the perfect time to catch up on coursera lectures and assignments before sunday deadlinesmooc
1	(en) What is the best iOS 6 compatible app for Coursera?	what is the best ios 6 compatible app for coursera
1	(en) Coursera's Internet History, Technology, and Security course starts in two days. Looks awesome! (And it requires no programming.) #IHTS	courseras internet history technology and security course starts in two days looks awesome and it requires no programming ihts
1	(en) The Awesome moment when you signup for the Scala course in @Coursera and finds out the instructor is the creator of Scala	the awesome moment when you signup for the scala course in coursera and finds out the instructor is the creator of scala
1	(en) @: Awesome chat with Pat Bosshart about next-gen #SDN chipsets. http://t.co/FF3K986nVf I learned a ton. Week 5 of @coursera cove...	awesome chat with pat bosshart about nextgen sdn chipsets i learned a ton week 5 of coursera cove
1	(en) @ Best of luck on your @Coursera journey. Follow @DukeU for updates on Duke news, research and campus life.	best of luck on your coursera journey follow dukeu for updates on duke news research and campus life
1	(en) Hey @coursera @open2study We wanted to let you know we featured your awesome courses in our Courses of the Weekend! http://t...	hey coursera open2study we wanted to let you know we featured your awesome courses in our courses of the weekend
1	(en) Best platform is Coursera...I've done loads! :)	best platform is courseraive done loads
1	(en) 2014 Internet Trends http://t.co/JLTa3pAjM1 - Impressive growth in online learning resources like @khanacademy @coursera and @duolingo.	2014 internet trends impressive growth in online learning resources like khanacademy coursera and duolingo
1	(en) BBC News - Trinidad pioneers online 'knowledge network' http://t.co/nowzNvkfKW . Impressive to see @coursera working on knowledge.tt.	bbc news trinidad pioneers online knowledge network impressive to see coursera working on knowledgett



a week of tweets



number of tweets: 4,976

average sentiment 0.05

average sentiment, neutral (0) removed 0.21



sentiment	(detected language) original tweet	analyzed tweet [automatic translation, processed]
-1	(en) I'm watching a khan academy video in my miserable attempt to pass mannings quiz tomorrow	I am watching a khan academy video in my miserable attempt to pass mannings quiz tomorrow
-1	(es) Khan academy, tareas, examenenes mensuales y auditoria TODO junto es HORRIBLE!!!!!!!!!!!!!!😞😞😞	khan academy assignments exams and monthly audit all together is horrible
-0.8	(en) @ hate khan academy!	ugh hate khan academy
-0.8	(en) @ and those stupid pendragon essay and khan academy	and those stupid pendragon essay and khan academy
-0.8	(en) @ I hate khan academy	i hate khan academy
-0.8	(en) hate khan academy	hate khan academy
-0.8	(en) @: I've been watching Khan Academy videos all day bc I can't get to the stupid review on mypisd	I have been watching khan academy videos all day bc i cant get to the stupid review on mypisd
-0.8	(gl) Estupido khan academy🙄🙄	stupid khan academy
-0.8	(en) Ugghgh I hate khan academy 🤢	ugghgh i hate khan academy
-0.8	(en) I freaking hate khan academy>:(	i freaking hate khan academy>
-0.8	(en) @: khan academy is so fucking stupid and it pisses me off to the max	khan academy is so fucking stupid and it pisses me off to the max
-0.8	(en) I really hate Khan Academy	i really hate khan academy
-0.8	(gl) ODIO CON TODO MI CORAZON KHAN ACADEMY!!!!	hate with all mi heart khan academy
-0.8	(en) it has gotten to the point where I put on khan academy to listen to on the way to school i literally hate myself	its gotten to the point where i put on khan academy to listen to on the way to school i literally hate myself
-0.8	(en) I fucking hate Khan Academy	i fucking hate khan academy
-0.8	(en) I hate khan academy someone should show me how to do this	i hate khan academy someone should show me how to do this
-0.8	(pt) essa porra desse khan academy é chato demais	this fucking khan academy is too boring
-0.8	(en) I will always hate math & Khan Academy	i will always hate math khan academy
-0.8	(en) khan academy: saving my geometry grade one annoying ass video at a time	khan academy saving my geometry grade one annoying ass video at a time



khan academy is

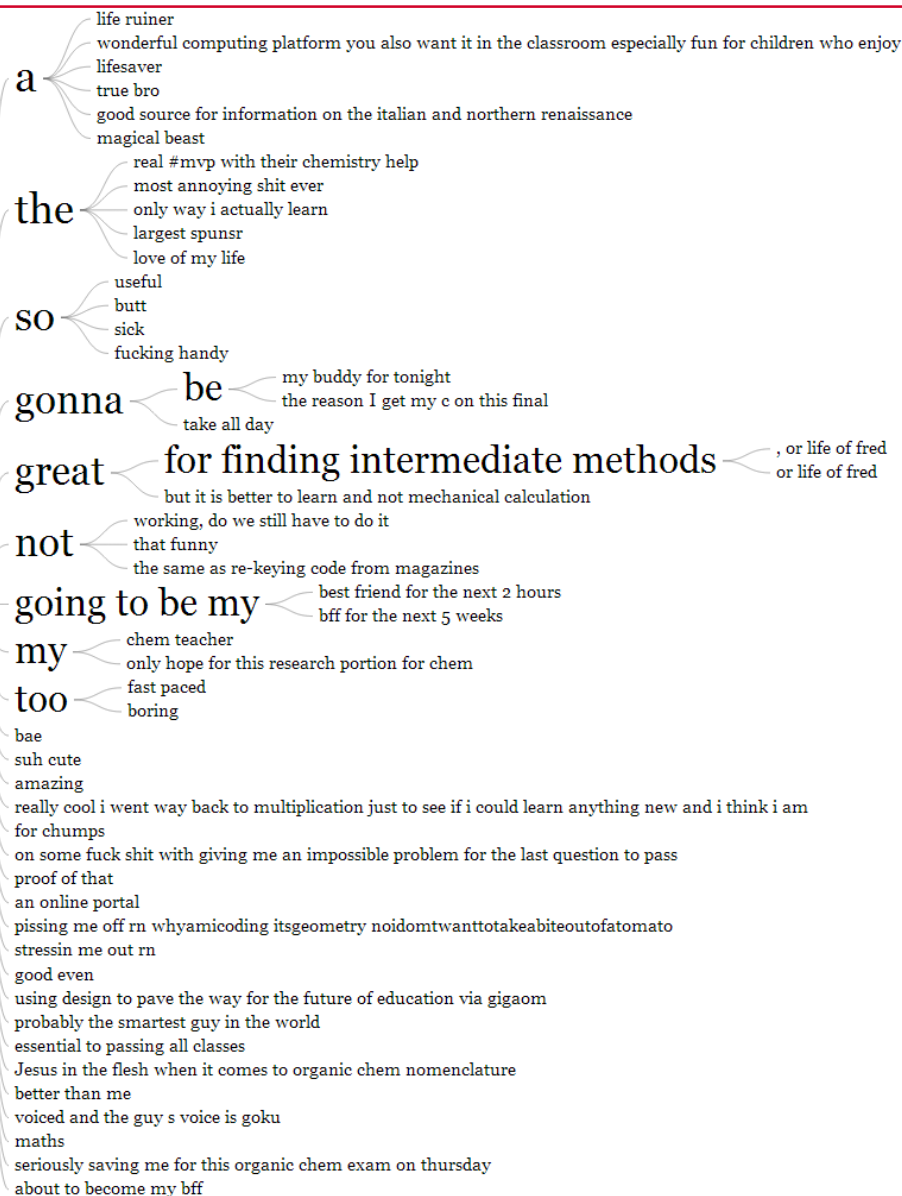
n = 112 (part 1/2)





khan academy is

n = 112 (part 2/2)





**functions**

fixing/establishing one's common core education via targeted education mix, assembled from thousands of small lectures (mathematics & STEM education in the first place)

just-in-time educational content helping one succeed in the traditional education system

access to coherent primary/high school common core for self-directed learning under one platform

personality

social mission – transformation of education – focused on transforming education system

flipping the traditional institutional education system & opening it up

centralization & integrity

gamification & storytelling (self-driven education & school performance) as an education facilitator

close (semi-formal, even informal) relationship/friendship with Salman Khan

brand essence

I need to
learn to move on

performance

providing opportunity to deal with required necessities within the traditional education/qualification system (& facilitating it) and/or serve as its supplement using “catchy” lectures, personalization & gamification

Khan Academy as a big, open & informal (with a lot of “background” content) family led by “father Sal”, developed & enabled by a small team (ICT development and/or content creation), co-developed & spreaded thanks to the effort of its volunteer community

publicizing the new “science” courses & establishing partnerships with (a limited number of) key/influential institutions in order to popularize & facilitate stem education

source of authorities

Salman Khan positioned by major news, tech & also education-focused publishers as education transformation leader (via video & technology) & successfully communicating core topics of his vision

strong & growing user & volunteer community, “transparent” & well-delivered background processes & development activities

[also influencing KA and/or its brand]

College Board (SAT college admission exam), the White House, NASA, and Bank of America partnerships; Bill Gates

social web testimonials mentioning positive experience with KA's educational content - STEM subjects above all (unsurprisingly) – including “thanks” posts regarding necessity of studying a particular topic (e.g. last-minute homework and/or exam preparation)

shaping education since 2006

conclusions



target markets

in accordance with the primary/high school education system it exists within, Khan Academy is slightly more English speaking countries-centered (US, Canada, UK, Australia); nevertheless, thanks to its volunteer translator community & development of localized (/translated) portals, it increases its reach via these "scattered but focused epicentres" which help its (rather centralized) growth

for example, communities were found in Brazil & Latin America, Egypt, Sweden, Japan, India, Bangladesh, Pakistan, Trinidad and Tobago, Jamaica, Cambodia, Ghana, Singapore, Hong-Kong., Kenya, Nigeria, Czech Republic, France, the Republic of Haiti, Spain & Portugal

positioning

customer persona

a sympathizer of Khan Academy is a part of huge community around Salman Khan & his path towards education transformation

a user of Khan Academy is a primary/high school student, prepares herself/himself to a standardized school/admission examination – e.g. math or SAT, also economics, science, or medicine – and/or is an older (than high school age) female/male supplementing (filling gaps in) her/his education (mathematics above all)

a user/sympathizer of Khan Academy is inclined towards gamification of education – collecting points & badges, accepting challenges & solving brain teasers (possibly serving as a door-opening moment) and/or enjoys exploring new topics (from her/his perspective, e.g. computing)

KPI

achievement / qualification beyond Khan Academy

keywords

salman, khan, nasa, youtube, videos, college board, stem, bill gates, free, online, education, english, learn, itunes, great, good, know, more, sensation, bring, expand, opportunities, collaboration, new, launch, tutorial, ...

USP & competitive advantage

extensive 'menu' of micro lectures covering basics of STEM education (& more), enabling flexible assembling of individualized curriculum plan under a single platform

competition

mathisfun, purplemath, grockit, gradeslam, showme, virtualnerd, regentsprep, mathwarehouse, ...

traffic sources

social media, major online news & tech publishers, KA's own & third-party blogs, education-focused publishers, KA websites in other languages, traditional K-12 education, ...

youtube, facebook, google+, twitter, nytimes, techcrunch, wsj, fast company, forbes, cnetnews, washingtonpost, ted, mashable, education week, wikipedia, sina, es.khanacademy, pt.khanacademy, market watch, cbs, telegraph, el economist, cnrmoney, nasa, bill gates, tumblr, edsurge, paniit-bayarea, techcrunch, iturank, the hindu, linkedin, slashdot, patch, feedsportal, kqed, stackexchange, uwstout, wordpress, abcnews, ck12, cmu, cnn, gawker, go, hawaii, hpu, huffingtonpost, ljworld, metafilter, niu, rosettastone, sc, nbcnews, smithsonianmag, tulsalibrary, utexas, uvm, waldorf, wwhtsnew, wtol, yahoo, google, hbr, ...

wider associational universe

open educational resources, ck-12 foundation, alison, opencourseware, massive open online course, udacity, mit opencourseware, learnstreet, technology integration, interactive learning, two circles, oer commons, free high school science texts, educational technology, open textbook, american friends of arts et méiers paris tech, curriki, virtual university, learnthat foundation, mitx, phet interactive simulations, teaching channel, computers in the classroom, e-learning, ineedapencil, saylor foundation, collectspace, lecture recording, open source learning, east bay children's book project, knewton, ...



**STRENGTHS**

- traditional primary & high school education and supplementing it
- resources tailored for US education system
- strong and connected user & fans community
- growing volunteer community, translations
- YouTube: KA's micro lectures among the most popular YouTube educational content; Facebook & Google+: brain teasers & challenges; Twitter: background information via employees & interns
- stable growth of reach & fan base; its increased growth if a significant partnership is entered
- iTunes users reach, including Apple mobile devices (iPad above all)*

* Windows Store version of the Khan Academy's app is also available

WEAKNESSES

- (compared to Coursera) less personal (word-of-mouth, not by online publishers) social media testimonials regarding positive experience with particular educational content; social media (general) mentions by online publishers rather than by "influential" – as measured by potential reach – pupils/students (also determined by age) & teachers
- the question "why to learn something" often answered by necessity – external motivation, e.g. school/exam – rather than "pursuing one's goals/interests" – intrinsic motivation, e.g. a concept searched for & explained within a specific practical application rather than as itself
- inactive LinkedIn company page

OPPORTUNITIES

- older (than high school) population filling the gaps in their education
- an opportunity to influence & shape the US K-12 education system as well as systems in other (not) only English-speaking countries
- subtitles translations & volunteer communities
- an opportunity to easily communicate/deliver key topics to its whole user base & beyond (centralization, Salman Khan's wide publicity & key influential partnerships)
- "breaking out of math" & becoming platform providing general introduction to all "traditional" subjects / disciplines, i.e. complex primary & high school education

THREATS

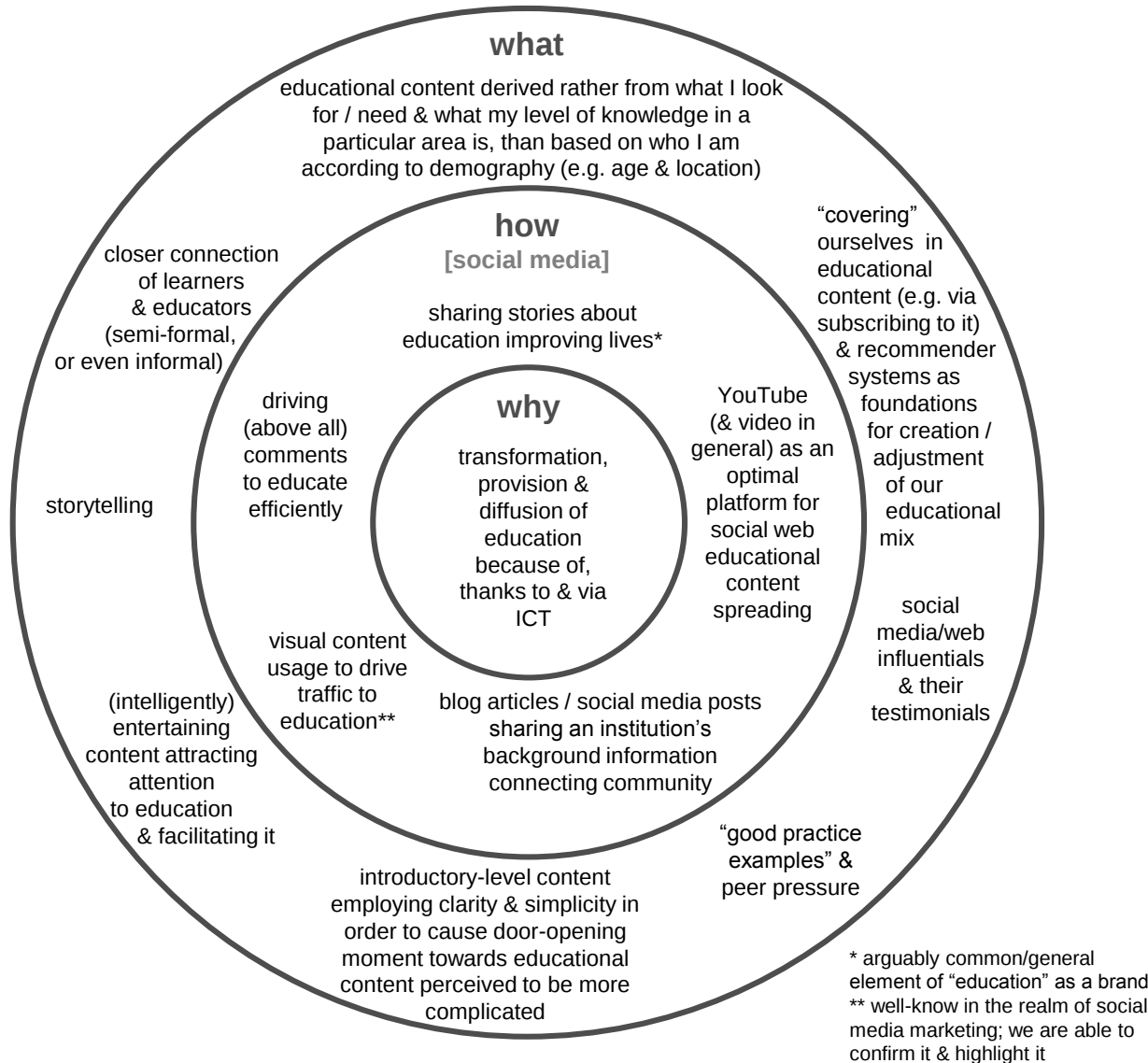
- a very tight relationship between the "Salman Khan" brand & "Khan Academy" brand (in case of an unfortunate event causing damage to his name)
- eventuality of losing the "revolutionary" part of the brand due to closer connections to the traditional education system (its adjustment & blending into it)



conclusions



education on the social web



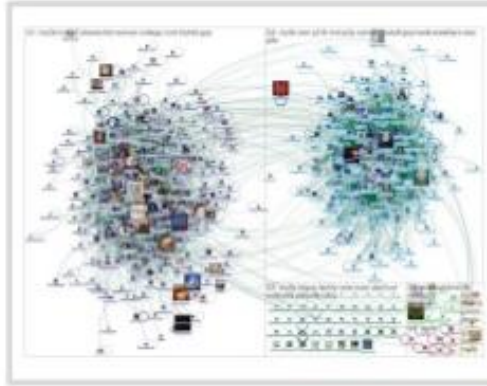
opakující se “vzorce” v “online momentkách” (Marc Smith)

<http://www.pewinternet.org/2014/02/20/mapping-twitter-topic-networks-from-polarized-crowds-to-community-clusters/>



6 kinds of Twitter social media networks

[Divided]
Polarized Crowds



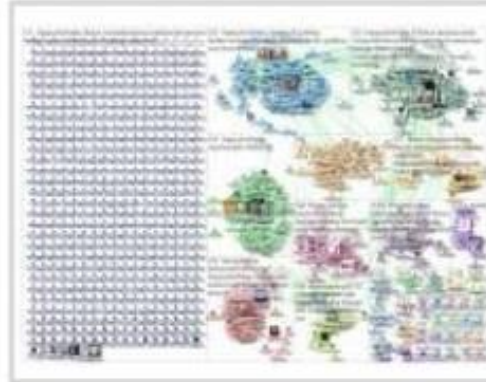
[Unified]
Tight Crowd



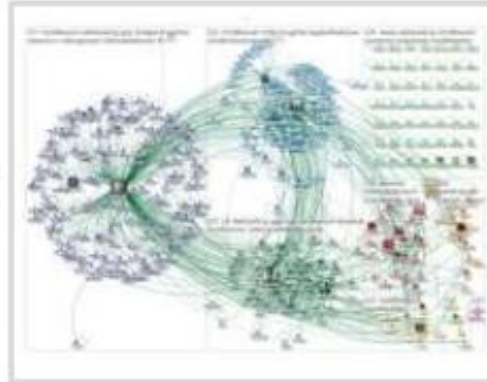
[Fragmented]
Brand Clusters



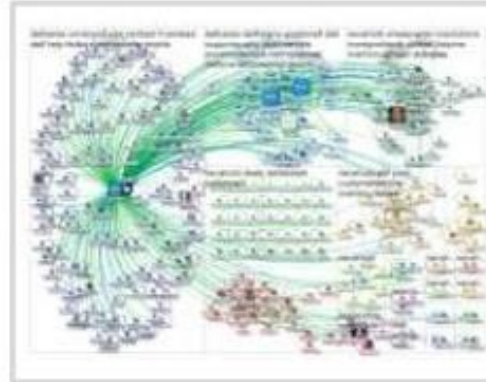
[Clustered]
Community Clusters

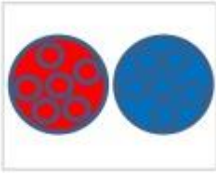
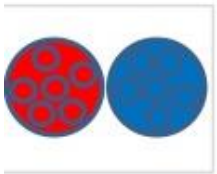


[In-Hub & Spoke]
Broadcast Network

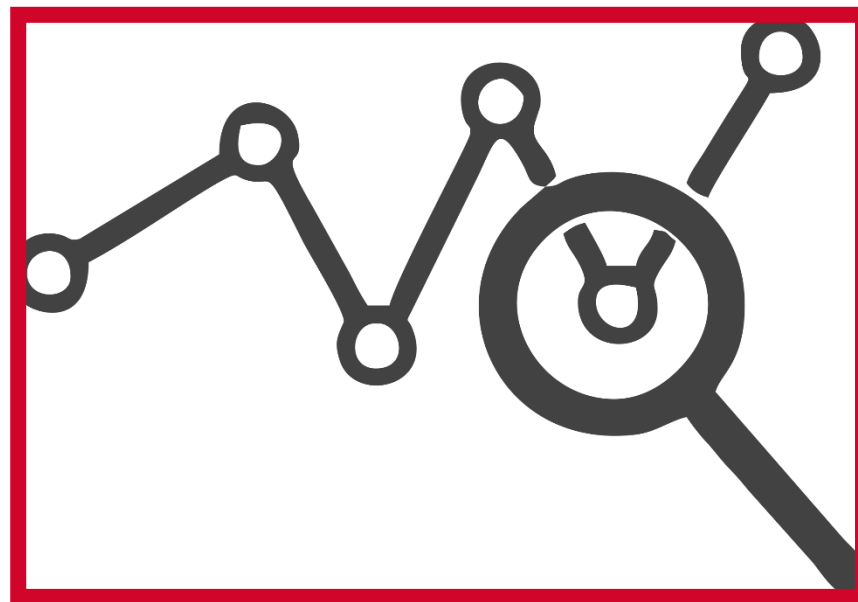


[Out-Hub & Spoke]
Support Network



	[Divided] <i>Polarized Crowds</i>	[Unified] <i>Tight Crowd</i>	[Fragmented] <i>Brand Clusters</i>	[Clustered] <i>Communities</i>	[In-Hub & Spoke] <i>Broadcast Network</i>	[Out-Hub & Spoke] <i>Support Network</i>
						
		[Low probability] Find bridge users. Encourage shared material.	[Low probability] Get message out to disconnected communities.	[Possible transition] Draw in new participants.	[Possible transition] Regularly create content.	[Possible transition] Reply to multiple users.
	[Undesirable transition] Remove bridges, highlight divisions.		[Low probability] Get message out to disconnected communities.	[High probability] Draw in new participants.	[Possible transition] Regularly create content.	[Possible transition] Reply to multiple users.
	[Undesirable transition] Increase density of connections in two groups.	[Low probability] Dramatically increase density of connections.		[High probability] Increase retention, build connections.	[Possible transition] Regularly create content.	[Possible transition] Reply to multiple users.
	[Undesirable transition] Increase density of connections in two groups.	[Low probability] Dramatically increase density of connections.	[Undesirable transition] Increase population, reduce connections.		[Possible transition] Regularly create content.	[Possible transition] Reply to multiple users.
	[Undesirable transition] Increase density of connections in two groups.	[Low probability] Dramatically increase density of connections.	[Low probability] Get message out to disconnected communities.	[Possible transition] Increase retention, build connections.		[High probability] Increase reply rate, reply to multiple users.
	[Undesirable transition] Increase density of connections in two groups.	[Low probability] Dramatically increase density of connections.	[Possible transition] Get message out to disconnected communities.	[High probability] Increase retention, build connections.	[High probability] Increase publication of new content and regularly create content.	

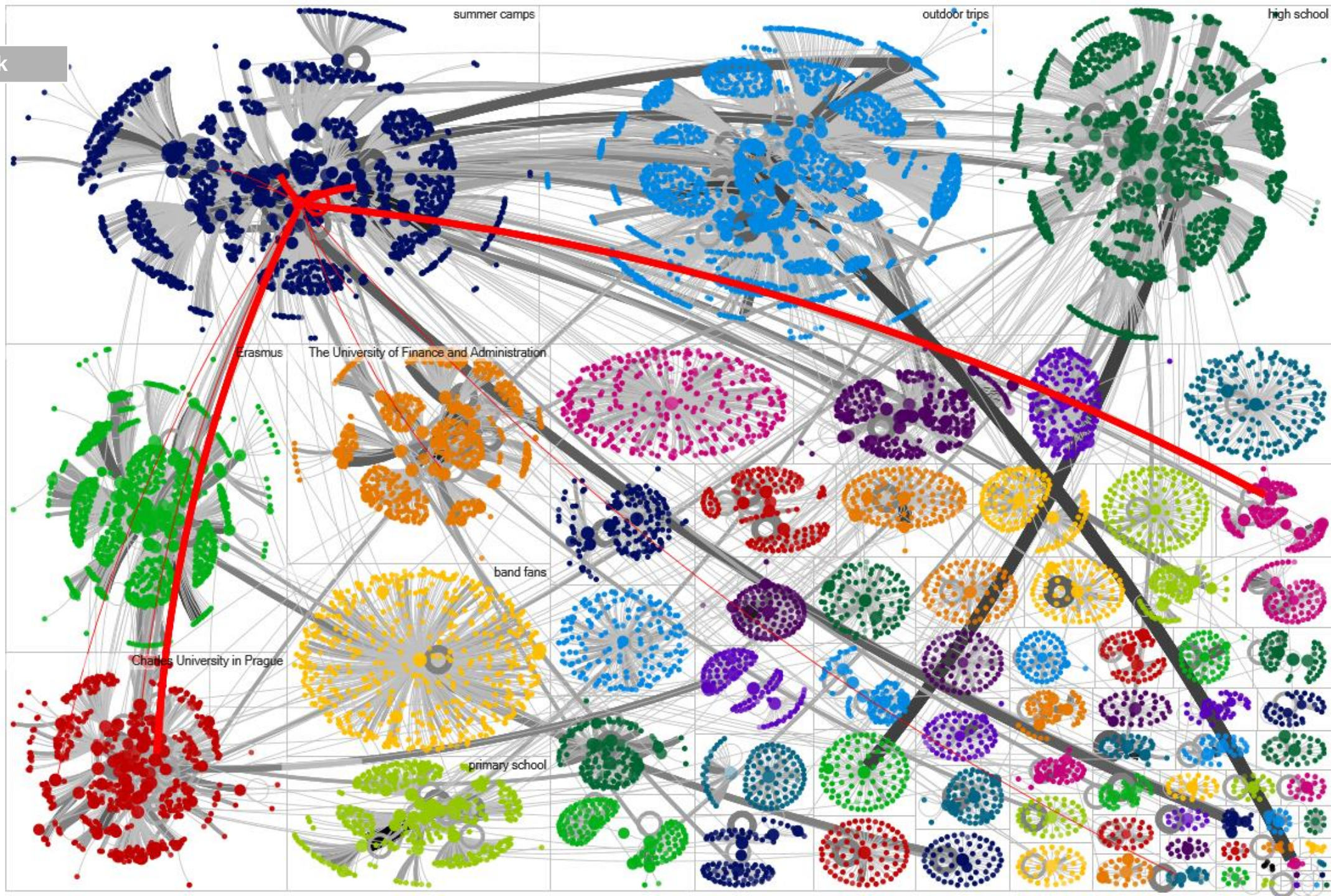




“micro” úroveň analýzy

**úroveň jednotlivce, online/offline
instituce, úroveň konceptu, ...
personal/page/group/keyword
networks**

personal network



interest profiles



top 10 common page likes in my personal network

	Nejlepší zábava
	Jaromír Jágr
	Viral Vines
	You.bo
	Český olympijský tým
	15+
	Užívám si života naplno
	Žiješ jen jednou
	House
	Partička

n-=375 friends

top 10 common page like categories in my personal network

community	1064
musician/band	580
tv show	227
local business	210
movie	207
website	198
athlete	193
public figure	184
food/beverages	177
non-profit organization	173

n-=375 friends



...a obsah, který sdílí tomu odpovídá

n/a

(vyjmuto z prezentace)



takže by učitele mohlo zajímat

nejen to, co najde v
analytikách Khan Academy
své třídy (analýza studijních
výsledků)

..., ale také (a možná
zejména), jak to udělat, aby
se studenti samostatně
vzdělávali

měřit výsledky vzdělávání
může být v “nastupujícím”
personalizovaném
vzdělávacím “systému”
obtížné

..., nicméně, měřit, nakolik
se nám daří, aby
jedince/skupinu vzdělávání
zajímalo (jako předzvěst
celoživotního self-driven
vzdělávání) je na social
webu jednoduché

a co související témata typu
“počítačová bezpečnost”?



jak má vypadat škola ve světě, kde máme na dosah ruky (/kliknutí myši) k dispozici nepřeberné množství učitelů a vzdělávacího obsahu, z nichž si můžeme svobodně vybírat a libovolně je kombinovat? (a sami se kdykoliv stát tvůrcem /prosumerem)





**recommendation
systems**

“jsme to, čím se obklopujeme”

obecné základy doporučovacích systémů (bez matematiky a programování)

obsah typicky (mimo množství dalších faktorů) měřen metrikami “engagement” a “reach”

“hodnota” uživatele (obdobně) typicky vyjádřena pomocí “influence” (kolik lidí s mým obsahem interaguje) a “network size” (mezi jak velkou skupinu uživatelů svůj obsah vysílám)

(příklad algoritmu*)
facebook newsfeed algorithm
[youtube.com/watch?v=K_jTK3fM6vA](https://www.youtube.com/watch?v=K_jTK3fM6vA)

* zároveň můj první nesmělý pokus o online lekci =>

...přičemž nesmíme zapomínat, že stále mluvíme o personalizovaném obsahu na základě user-user a/nebo item-item principů (influencer také zpravidla existuje pro určitou oblast a skupinu lidí, nikoliv “generálně”)

(nejen) pro žáky a studenty sociální média představují každodenní součást života

“the curse of choice”, kterou pak algoritmus za nás rozhodne ve prospěch populárního obsahu



základy doporučovacích systémů prakticky (v Pythonu) a zdarma



youtube demo

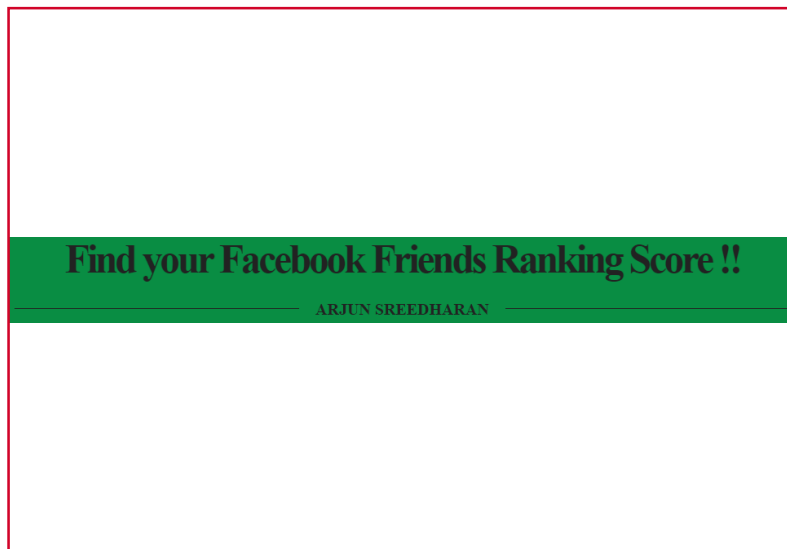
(žijeme v různých realitách)

<https://www.youtube.com/>

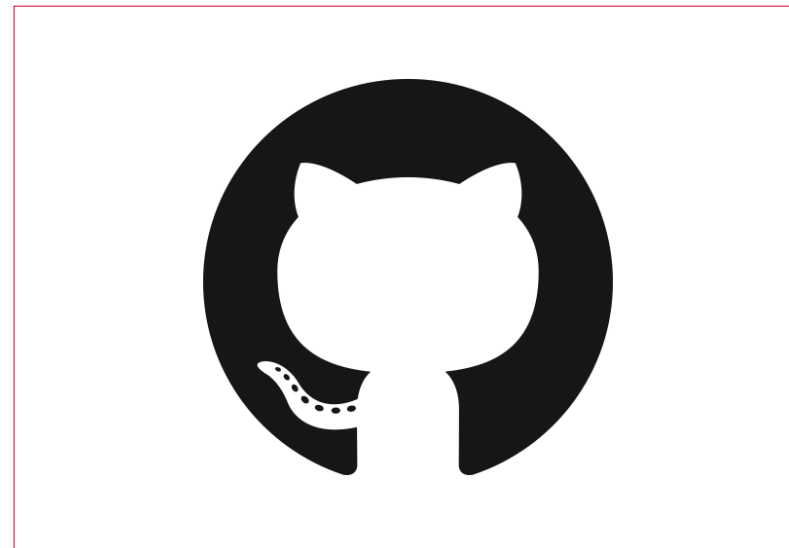


facebook ranking score demo

(kdo/co si nárokuje nejvíce vaší pozornosti)



arjunsreedharan.org/post/65979958297/find-your-facebook-friends-ranking-score



github.com/arjun024/facebook-friends-ranking-score



úvahy

information
cascades, opinion
leadership, virality,
collective
intelligence

cena času

“education mix”
vzdělávajícího se i
vzdělavatele

pochopení “kultury”,
“individuální reality”,
“každodenního
žitého světa”

zasáhnutí platforem,
s nimiž interagujeme
na každodenní bázi
(z vlastní iniciativy,
pull marketing)

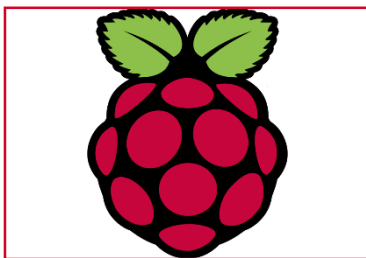
...



obecně funguje “peer education” (např. YouTuber vrstevník) a posílení vlastního statusu (např. vlastní YouTube tvorba)

např. (můj “oblíbenec”)
[TheRaspberryPiGuy](#)

...i VŠ studenti se ekonomii učí
z [ekofun](#), matiku z
[matematika.cz](#), pokud umí
anglicky, tak od [patricjmt](#), ...
(pouze příklady z nepřeberného
množství dalších zdrojů)



Raspberry Pi



**z toho, co jsem kdy analyzoval já, je častým
(a často jediným*) vzdělávacím obsahem
v newsfeedu žáků ZŠ (/SŠ)**

* nedovedu posoudit statistickou významnost
(analýzy ve volném čase, nikoliv výzkum s promyšlenou metodologií)

photoshop
(a/nebo video
editing software)
tutorials

minecraft
tutorials

unity tutorials

“computer
security”

“script kid” hackování
a/nebo (častěji)
“jak vypadat jako hacker”

...od čehož se
ale lze odrazit

(navázat na to
probíranou látku)



úvahy vol.2

nejde jen o dostupný
vzdělávací obsah
“velkých hráčů”

(coursera, edx, mit ocw, khan
academy, udacity, udemy,
lynda.com, canvas network, ...)

...ale především o obří
množství materiálu
vyprodukovaného q&a
fóry, bloggery, youtubery a
dalšími jednotlivci a
skupinami

učení ≠ jeden
centralizovaný systém

(i proto se snažíme těžit data napříč
internetem, ne jen z jedné
platformy)

vystavení žáka-studenta
co nejvíce (a co nejvíce
formám) podnětného
obsahu

další (kýžený) “level” je
zapojování se do tvorby a
učení se učením ostatních
(sdílení, remix, vlastní tvorba, ...)



příklad: “chtěl bych se naučit web development”

<https://www.khanacademy.org/>
<https://www.coursera.org/>
<https://www.udacity.com/>
<https://edx.org/>
<http://ocw.mit.edu/>
<http://online.stanford.edu/>
<http://www.extension.harvard.edu/>
<http://webcast.berkeley.edu/>
<http://nptel.ac.in/>
<http://blog.agupieware.com/2014/05/online-learning-bachelors-level.html>
<https://www.class-central.com/>
<http://www.tutorialspoint.com/>
<https://iversity.org/>
<https://www.canvas.net/>
<https://www.futurelearn.com/>
<http://www.saylor.org/>
<http://www.lynda.com/>
<https://www.udemy.com/>
<http://www.codecademy.com/>
<https://www.codeschool.com/>
<http://www.pluralsight.com/>
<https://teamtreehouse.com/>
<https://www.youtube.com/user/GoogleDevelopers>
<https://www.youtube.com/user/thenewboston>
<https://www.youtube.com/user/MarakanaTechTV>
<https://www.youtube.com/user/mycodeschool>

<http://www.w3schools.com/>
<https://developer.mozilla.org>
<http://www.theodinproject.com/>
<https://www.owasp.org/>
<https://jquery.com/>
<http://threejs.org/>
<http://processingjs.org/>
<https://www.virtualbox.org/>
<http://www.ubuntu.com/>
<http://stackexchange.com/sites#>
<http://stackoverflow.com/>
<http://www.reddit.com/>
<https://git-scm.com/>
<https://github.com>
<https://bitbucket.org/>
<https://nodejs.org/>
<http://expressjs.com/>
<https://www.sqlite.org/>
<https://www.mongodb.org/>
<http://phonegap.com/>
<https://msdn.microsoft.com/en-us/library/windows/apps/br211385.aspx>
<https://developer.ubuntu.com/en/apps/html-5/>
<https://www.heroku.com/>
<https://projects.apache.org/indexes/category.html>
<http://www.gnu.org/software/guix/package-list.html>
<https://jsfiddle.net/>
<http://codepen.io/>
<http://bower.io/search/>
<https://www.npmjs.com/>
<https://www.javascripting.com>

(...)
<http://www.ted.com/>
<http://www.howstuffworks.com/>
<https://www.wikipedia.org/>
<http://www.oreilly.com/>
<https://www.packtpub.com/>
<http://www.manning.com/>
<http://eu.wiley.com/>
<http://www.elsevier.com/>
<http://www.nostarch.com/>
(...)
Q&A sites, bloggers, YouTubers, tutorials,
courses, conferences, interviews, ...

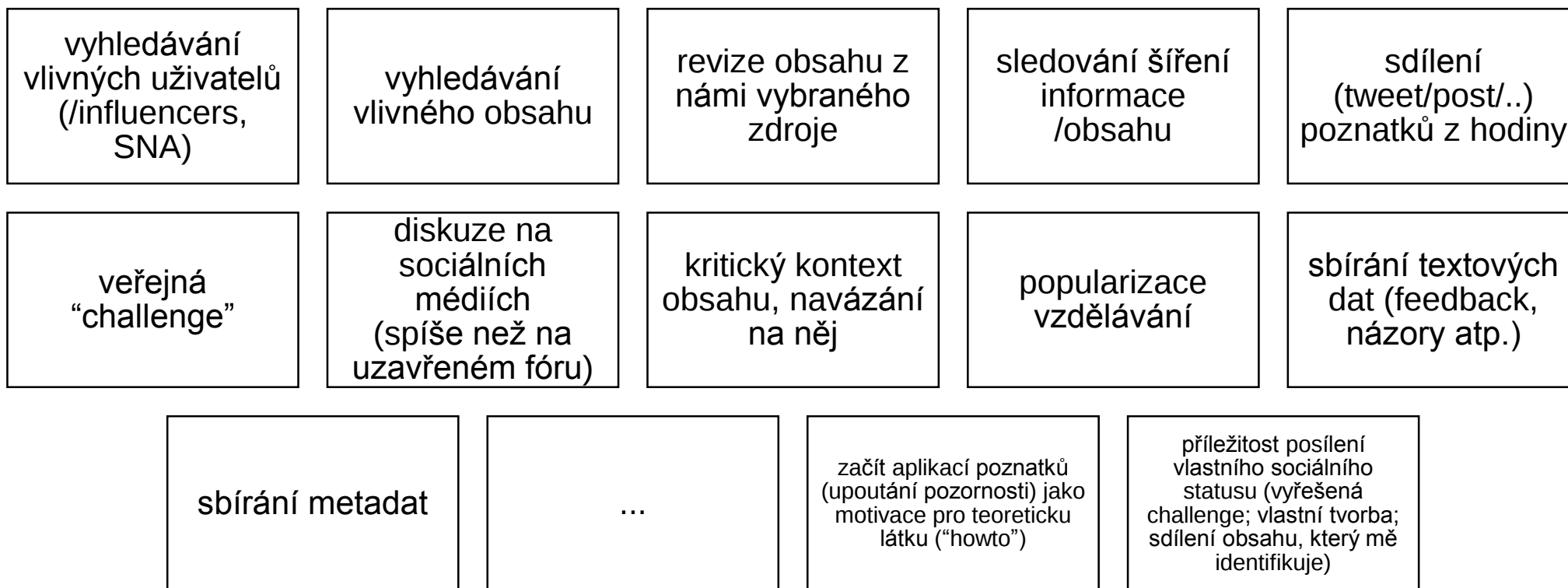


učitel jako “tvůrce”,
“kurátor”, ..., “marketér”
vzdělávacího obsahu?



“zaplnění” newsfeedu vzdělávacím obsahem /možná ohniska našeho analytického zájmu

“někdo” (collective intelligence) už fungující vzdělávací obsah “předvybral”
mít ale na paměti, že každému vyhovuje něco jiného



social media marketing průzkumy obecně

stránky se lajkují kvůli:
veřejné podpoře značky
(sociální status), vysoké
viralitě určitého obsahu, kvůli
získání výhod/slev/..., kvůli
zajímavým informacím,
zajímavému obsahu

ve výběru primárního
sociálního média může být
primární životní styl/“kultura“,
nikoliv věk

..., ale “the law of
diminishing coolness”
(teenagery je třeba “podchytit”
mimo naši
“comfort zone”)

stránky se dislikují kvůli:
značka postuje příliš často
(a/nebo repetitivní obsah),
“spamuje” personal newsfeed
reklamním obsahem,
jednorázové “zneužití“

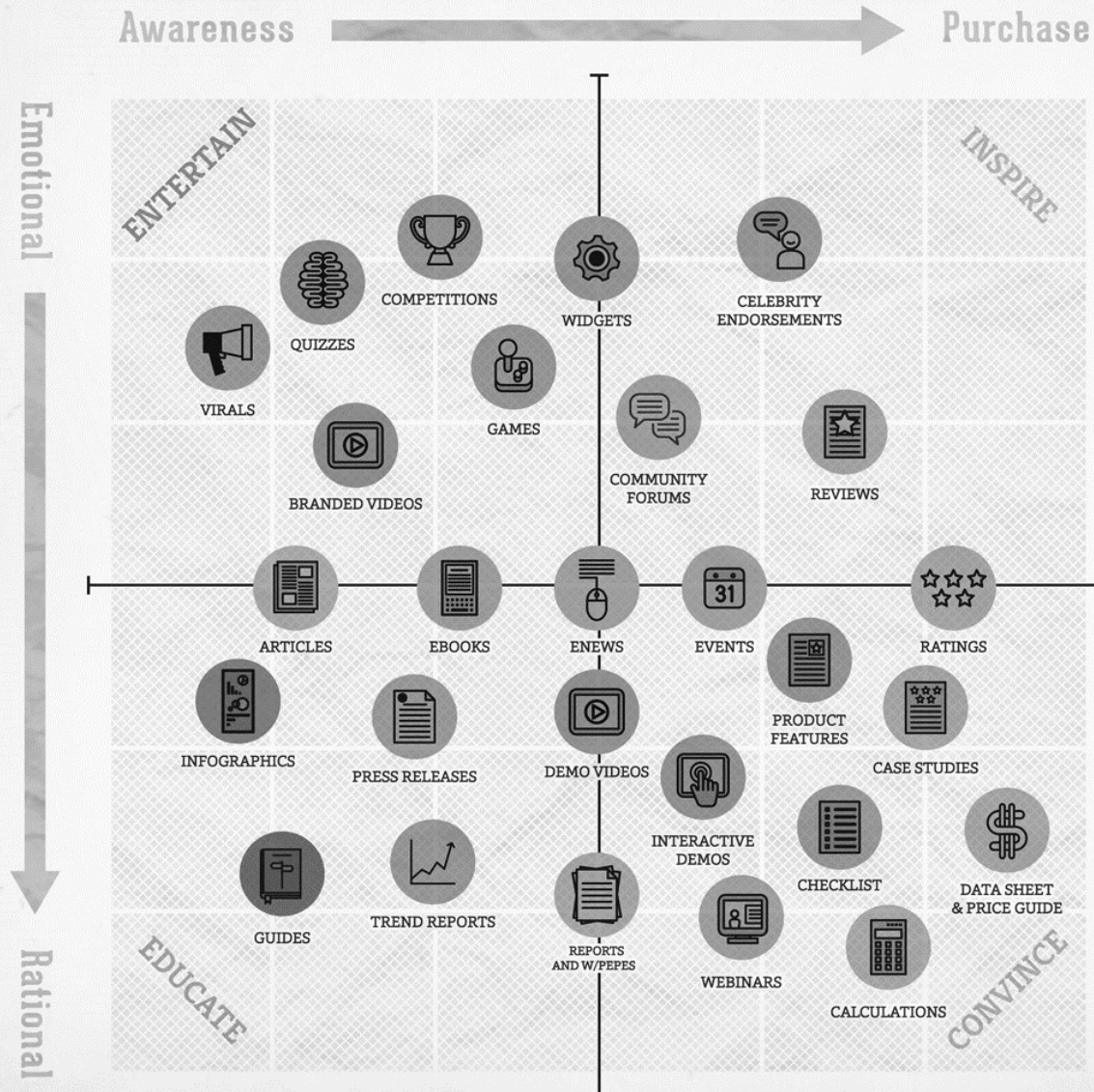
vizuální obsah funguje lépe
než prostý textový obsah
aktuálně “frčí”
autoplay videa

pull marketing namísto push
marketingu, příklady dobré
praxe

z hlediska customer care si
zákazník na sociálních
médích stěžuje, aby vyřízení
stížnosti urychlil a/nebo mu z
toho “něco káplo”



The Content Marketing Matrix



What are your marketing goals for content?

To help review your content marketing options for your B2C, B2B or not-for-profit organisation, and map content formats against customer purchase intent and decision style.

Use the four quadrants Entertain, Inspire, Educate and Convince as a starting point to spark your own ideas.

Let us know what you think
 @smartinsights and
 www.smartinsights.com

BROUGHT TO YOU BY

FIRST 10

&

Smart Insights



také nezapomínejme (pokud nemáme k dispozici všechna data)
na “ghost followers”



pic: <http://www.playbuzz.com/ebscrooge10/which-kind-of-ghost-hunter-are-you>





diy

**při využití third-party knihoven je programování v Pythonu
(a/nebo jiném high-level language) jednodušší, než
hledání tlačítek v UI softwarového balíku
(pokud kýženou funkci vůbec nabízí a nenastane
žádná chyba, se kterou nemůžete nic dělat)**

webová data

jako nástroj pro učitele
(naše předchozí diskuze)

jako vzdělávací obsah
(i samotná analýza
webových dat může být v
mnoha předmětech
přínosná)

prostředek k
zdokonalování ICT a
analytických dovedností a
door-opening moment pro
navázání dalšího kurikula
napříč předměty/obory



tools

programovací
jazyk

softwarový
balíček



až si s URLs a APIs začnete tykat, můžete sbírat data i bez programování
a/nebo softwarového nástroje

...také je třeba seznámit se s JSON a XML



ProgrammableWeb



Facebook Graph API
Explorer

(pokud si ještě netykáte)

↔ Get Token ▼

▶ Submit

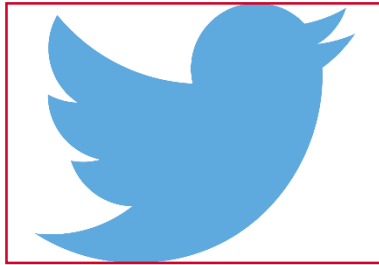


obdoba Facebook
Graph API Explorer
pro další sociální
média

(pokud si ještě netykáte)



aplikace (pro získání přístupových klíčů a tokenů)
dokumentace (pro získání kýžených dat)



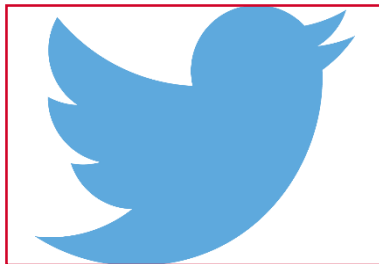
create app



create app



create app



doc



doc



doc



facebook graph api rest endpoints (příklady)

search

<https://developers.facebook.com/docs/reference/api/search/>

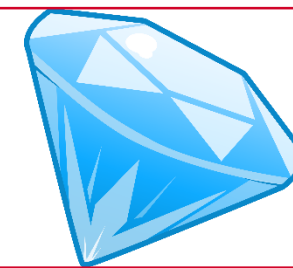
user, page, event, group, place,
placetopic, ad_*

pages edges

<https://developers.facebook.com/docs/graph-api/reference/page>

https://graph.facebook.com/109323929038/posts?fields=likes,comments,shares&limit=2000&since=1381449600&access_token=

≡



Open Refine

facebook insights libovolné stránky

https://graph.facebook.com/fql?q=select post_id,like_info,comment_info,share_info from stream where source_id=159403248441 and created_time>1356998400 and actor_id=159403248441 LIMIT 20000&access_token=

co daná stránka lajkla

https://graph.facebook.com/metodicky.port.al/likes?access_token=



Graph API Docs

(dokumentaci k API
naleznete v
Developers sekci
všech velkých SNSs)



bohužel...

api v2.0

https://graph.facebook.com/search?q=education&type=post&since=1388534400&limit=100&access_token=

```
{
  "error": {
    "message": "(#11) Post search has been deprecated",
    "type": "OAuthException",
    "code": 11
  }
}
```



zdroje dat ze sociálních médií:

(“obecnější” social web analýzu pomocí web crawlerů, web scrapingu, microdat atp. dnes nestihneme; soustředíme se na služby poskytující API endpoints)

**“public data”
z interakce se
stránkou/skupinou/...**

(prakticky pouze aktivita ve
vztahu k entitě)

**“private data”
z aplikace**

(prakticky veškerá důležitá data,
omezení na Facebooku:
[anonymous login](#))

...přesto je úplně nejlepší být
s někým kamarád

(na Facebooku už ale opět tolik
neplatí: [API Version v2.0](#))



“chtěl bych i vaše NE veřejná data” demo



facebook login



app dashboard
(vytvořte aplikaci, abyste získali credentials)

sign in with google+: <https://developers.google.com/+/web/>

sign in with twitter: <https://dev.twitter.com/web/sign-in>

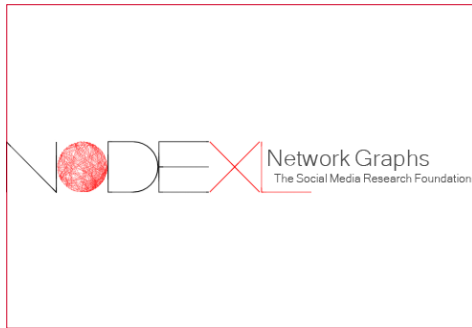
sign in with linkedin: <https://developer.linkedin.com/documents/sign-linked-in>

(pochopte, jak funguje OAuth protocol: <https://developers.google.com/oauthplayground/>)



nodexl dummy demo

 NodeXL Excel Template



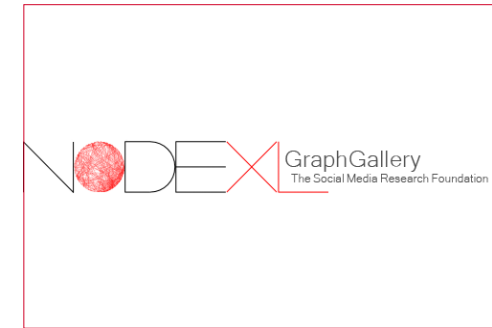
nodexl



social network
importer



teaching
resources



graph gallery



Wandora



Gephi



Netvizz



Knime



IFTTT

...



FILE

HOME

INSERT

PAGE LAYOUT

FORMULAS

DATA

REVIEW

VIEW

ABBYY FineReader 11

NodeXL

DESIGN

Import

Export

Prepare Data

Show Graph

Summary

Automate

Type: Undirected

Layout: Fruchterma...

Autofill Columns

Color

Opacity

Visibility

Vertex Shape

Vertex Size

Edge Width

Dynamic Filters

Graph Metrics

Subgraph Images

Groups

Use Current for New

Import

Export

Reset All

Options

Workbook Columns

Graph Elements

Show Notifications

Show/Hide

Help

Online

Donate

About

Help

A3

X

✓

fx

	A	B	C	D	E	F	G	H	I	J	N	O	P
1			Visual Properties					Labels			Other Columns		
2		Vertex 1	Vertex 2	Color	Width	Style	Opacity	Visibility	Label	Label Text	Label Font	Add Your Own	
3									Color	Size	Columns Here		
4		Vertex 1 Name Enter the name of the edge's first vertex.											
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44													

Edges

Vertices

Groups

Group Vertices

Overall Metrics ...

Document Actions

Show Graph

Fruchterman-Reingo

Lay Out Again

Dynamic Filters

Graph Options

Zoom: 100%

Scale: 100%



socialmedia
RESEARCH FOUNDATION
OPEN TOOLS OPEN DATA OPEN SCHOLARSHIP
<http://www.smrfoundation.org>



NODEX Network Graphs
The Social Media Research Foundation

NodeXL is brought to you by the [Social Media Research Foundation](#).

Do you have questions, comments or requests concerning NodeXL? Please join us on the [NodeXL discussion list](#).

Visit the [NodeXL Graph Gallery](#) to see the wide variety of graphs that have been created by the NodeXL community.

NodeXL is supported by user donations, which enable us to continually improve the product. Please help us continue our work by donating to the Social Media Research Foundation's NodeXL development fund.

Donate



READY

Grid

Print

Fullscreen

Zoom

Home

FILE HOME INSERT PAGE LAYOUT FORMULAS DATA

Import ▾ Show Graph ⇄ Type: Undirected ▾

Autofill Columns

- From UCINET Full Matrix DL File...
- From GraphML file...
- From GraphML files...
- From Pajek File...
- From Open Matrix Workbook...
- From Open Workbook...
- From NodeXL Graph Gallery
- From Email Network...
- From Facebook Fan Page Network...
- From Facebook Fan Page Network (v.2.0)...
- From Facebook Group Network...
- From Facebook Group Network (v.2.0)...
- From Facebook Timeline Network...
- From Facebook Timeline Network (v.2.0)...
- From Flickr Related Tags Network...
- From Flickr User's Network...
- From Twitter Search Network...
- From Twitter Users Network...
- From YouTube User's Network...
- From YouTube Video Network...
- From NodeXL Workbook Created on Another Computer...
- Get Third-Party Graph Data Importers ▸
- Import Options...

city Visi

22

Import from Facebook Group Network

The NodeXL Facebook Group network will download the connections between contributors in the specified group. You need to be a member of the group in order to download the network. After you login and authorize the application, you can search and select a group by typing in the text box, then click download.

[Click here to logout from Facebook.](#)

Group
Name/ID:

Attributes

Attribute	Include
Name	☒
First Name	☒
Middle Name	☒
Last Name	☒
Hometown	☒
Location	☒
Birthday	☒
Age Range	☒
Picture	☒
Email	☒
Timezone	☒
Gender	☒
Religion	☒
Relationship	☐

Network

☐ Vertices
☒ User ☐ Post

☐ Relationship
☐ Like ☐ Comment

☐ Create an edge between
☐ users who {0} the same post
☐ posts that have the same {0}
☐ {0} and post author
☐ two consecutive commenters
☐ {0} and comment author

Options

☒ Download from post to post
☐ Download posts between and
☐ Limit nr. comments/likes per post to
☐ Get status updates (slow)

Login Download Cancel



Import from Twitter Search Network

[This might take a long time: Twitter rate limiting](#)

Search for tweets that match this query:

fun math resources

[How to use advanced search operators](#)

What to import

☒ Basic network

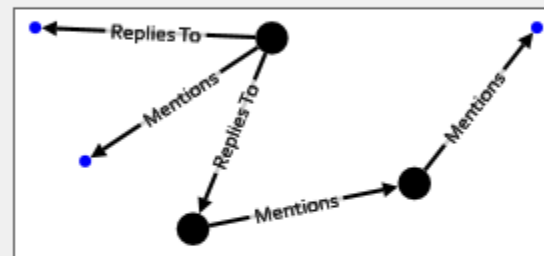
Show who was replied to or mentioned in recent tweets

[More about this option](#)

☐ Basic network plus friends (very slow!)

Add some of the users' friends

[More about this option](#)



Your Twitter account

☐ I have a Twitter account, but I have not yet authorized NodeXL to use my account to import Twitter networks. Take me to Twitter's authorization Web page.

☒ I have a Twitter account, and I have authorized NodeXL to use my account to import Twitter networks.

Limit to tweets

☒ Expand URLs in tweets (slower)

OK

Cancel



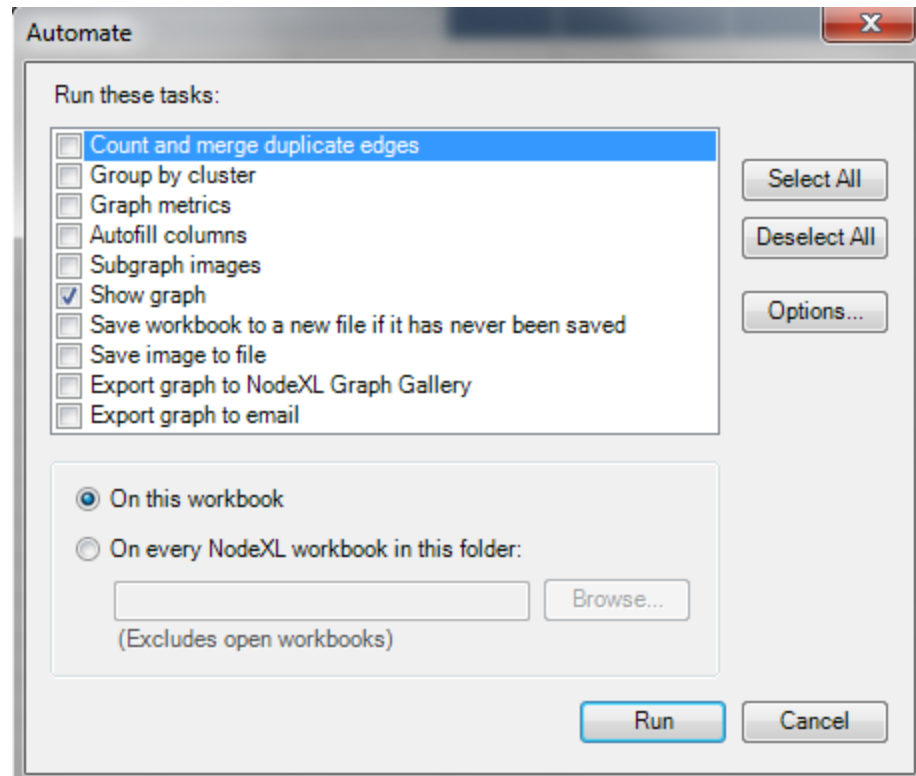
Vertex 1	Vertex 2	Relationship	Relationship Date (UTC)	Tweet	URLs in Tweet	Domains in Tweet	Hashtags in Tweet	Tweet Date (UTC)	Twitter Page for Tweet	Latitude	Longitude	Imported ID	In-Reply-To Tweet ID
rustyandros	rustyandros	Tweet	12.8.2015 20:55	Football F	http://www.rustyandrosy.com	prek earlylearn		12.8.2015 20:55	https://twitter.com/#!/rustyandrosy/status/631569625805946882			631569625805946882	
nancybelko	lifelegeros	Replies to	14.8.2015 14:31	@lifelege	http://sde.sde.com	crystalspringsbooks.c		14.8.2015 14:31	https://twitter.com/#!/nancybelkov/status/632197878438563840			632197878438563840	
natures_cal	natures_cal	Tweet	14.8.2015 1:19	NO-PREP-	https://www.teacherspayteachers.com			14.8.2015 1:19	https://twitter.com/#!/natures_cal/status/631998605679796224			631998605679796224	
natures_cal	natures_cal	Tweet	15.8.2015 11:20	NO-PREP-	https://www.teacherspayteachers.com			15.8.2015 11:20	https://twitter.com/#!/natures_cal/status/632512174938677248			632512174938677248	
lisanalbone	lisanalbone	Tweet	17.8.2015 1:57	How do y	http://www.lisanalbone.com			17.8.2015 1:57	https://twitter.com/#!/lisanalbone/status/633095390263308288			633095390263308288	
youbidderb	youbidderb	Tweet	17.8.2015 2:51	Free Ebay	http://www.youbidder.com			17.8.2015 2:51	https://twitter.com/#!/youbidderbutton/status/633108790825476096			633108790825476096	
thezenpare	thezenpare	Tweet	18.8.2015 4:20	Fantastic	http://zenparent.in	mathematics sy		18.8.2015 4:20	https://twitter.com/#!/thezenparent/status/633493675717324800			633493675717324800	



Vertex	Label Fill	Label	Tooltip	Add Your Own Columns Here	Followed	Followers	Tweets	Favorites	Time Zone UTC Offset (Seconds)	Description	Location	Web	Time Zone	Joined Twitter Date (UTC)	Custom Menu Item Text	Custom Menu Item Action	Tweeted Search Term?
rustyandr	images/2078377830/R	rustyandr			840	914	1628	10	-21600	Rusty & Rosy are charac	http://t	Mountain		22.7.2011 17:16	Open Twitter Page	https://twitter.co	Yes
nancybelk	images/627225905707	nancybelk			73	19	27	3		K - 8 Math E Boston, MA				3.2.2014 20:37	Open Twitter Page	https://twitter.co	Yes
lifelegero	images/581295804637	lifelegero			272	161	1022	206		Former Dire Somerville, MA				22.4.2012 2:46	Open Twitter Page	https://twitter.co	No
natures_c	images/526891682751	natures_c			971	486	988	9	-14400	Photos of N Southwest f	http://t	Eastern T		25.10.2009 22:13	Open Twitter Page	https://twitter.co	Yes
lisanalbor	images/378800000282	lisanalbor			664	762	7349	3604	-25200	Mom of gro Sacramento	http://t	Arizona		9.6.2011 1:08	Open Twitter Page	https://twitter.co	Yes
youbidder	images/553457701691	youbidder			1789	3591	521409	4337	-18000	Bid at the last second or	http://t	Central T		5.10.2013 2:12	Open Twitter Page	https://twitter.co	Yes
thezenpar	images/631712812117	thezenpar			378	168	2026	3	19800		Bangalore	http://t	New Del	12.11.2014 10:00	Open Twitter Page	https://twitter.co	Yes







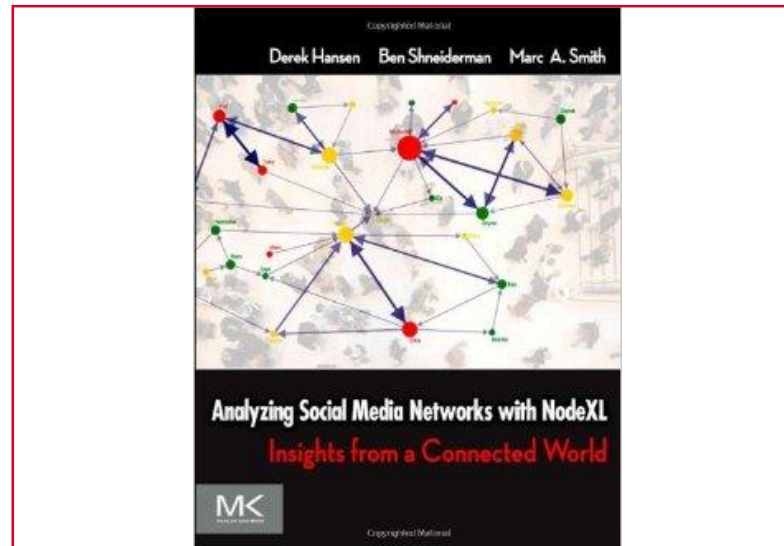
několik metrik “do začátku”

(matematický zápis /způsob výpočtu pod odkazem)

frequency	like /share /comment	keyword	inbound /outbound link
<u>degree</u> (kdo má nejvíce přímých konexí)	<u>betweenness centrality</u> (kdo celou síť nejvíce spojuje; klasicky “most” mezi dvěma skupinami)	<u>eigenvector centrality</u> , <u>pagerank</u> (kdo je nejvlivnější díky svým vlivným konexím)	<u>closeness centrality</u> (kdo může nejsnáze kontaktovat celou síť)
<u>clustering coefficient</u> (Clauset-Newman Algorithm)	<u>correlation</u>	descriptive statistics (mean, median, standard deviation, ...)	...



NodeXL SNA



HANSEN, Derek, Ben SCHNEIDERMAN
and Marc SMITH. ANALYZING SOCIAL
MEDIA NETWORKS WITH NODEXL:
INSIGHTS FROM A CONNECTED
WORLD. Burlington, MA: Morgan
Kaufmann, 2011. ISBN 01-238-2229-7.



python dummy demo



python



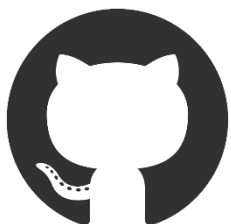
ipython /jupyter



linux ubuntu



virtualbox



awesome python

(odkazy na skvělé
knihovny; co všechno v
Pythonu hravě zvládnete)



PyCon
Connecting The
Python Community

pycon



pydata

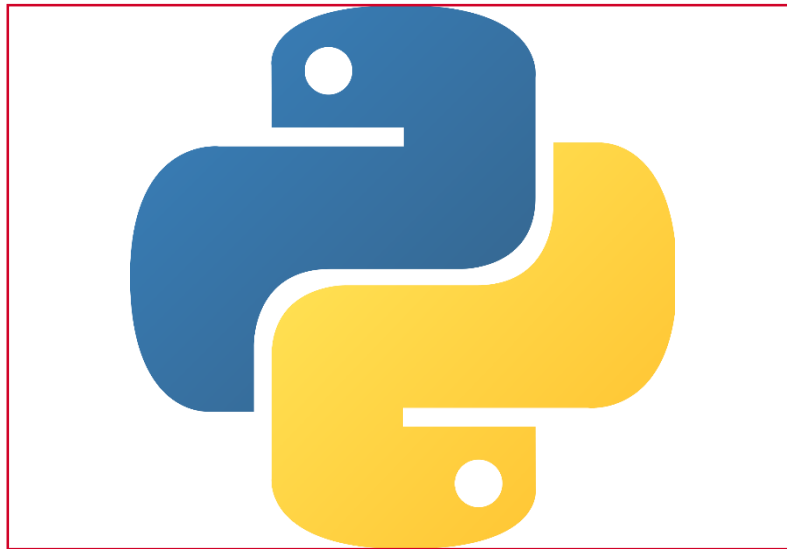


pyladies



code

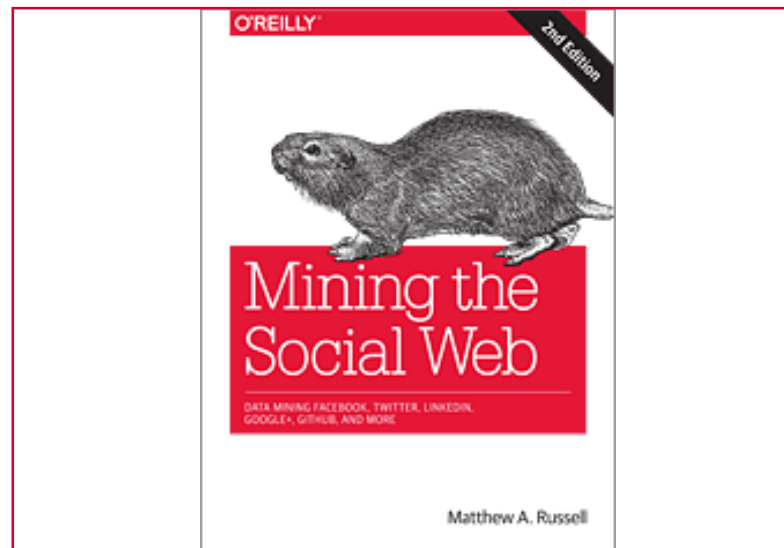
pokud jste (správně =)) zvolili Linux, mohly by vás zajímat příkazy sudo, pip, virtualenv



social web
mining



Python Social Web Mining



RUSSELL, Matthew A. MINING THE
SOCIAL WEB: DATA MINING
FACEBOOK, TWITTER, LINKEDIN,
GOOGLE , GITHUB, AND MORE. 2nd
ed. Sebastopol: O'Reilly, 2014. ISBN 978-
1-449-36761-9.



závěrem

data-driven education není
samo spásná
(technokratizmus)

stále jde primárně
o intelektuální inspiraci a
pomoc v případě potřeby

růst diverzity poskytovatelů
vzdělávání pro různé cílové
skupiny (lépe “různé vzdělávací
příležitosti/okamžiky”) je skvělá
věc, ale je jednoduché ztratit
(případně “rezignovat”)

analýza social web dat
umožňuje učitelům cíleně a
kvalifikovaně podporovat
neformální vzdělávání a/nebo
ho propojovat s formálním

analýza social web dat
napomáhá přemýšlení nad
virtuálním prostředím, jímž se
obklopujeme, abychom vědomě
upravovali svou
“filter bubble”

analýza social web dat může
být prostředkem zdokonalování
ICT a analytických dovedností
a door-opening moment pro
navázání dalšího kurikula
napříč mnoha předměty/obory



~~domácí úkol~~ challenge

zkuste analyzovat (pomocí NodeXL,
v Pythonu, ...) social media profily RVP,
své školy, skupinu své třídy/ročníku atd.

...najít společné charakteristiky populárního
vzdělávacího obsahu, vlivné uživatele atp.
a aplikovat poznatky ve výuce

...a podělte se o své zkušenosti na fóru,
nasdílejte své výsledky, zeptejte se, diskutujte



engagement

**(ně)co vás zaujalo?
máte nějaký dotaz?
rád vás nasměruji na:**

nástroj(e)

knížku/učebnici

otevřené vzdělávací
zdroje /kurzy/koncepty/...

vhodné/nezbytné
prerekvizity

...



DĚKUJI ZA POZORNOST
diskutujte cokoliv, co vás zajímá

ANALÝZA WEBOVÝCH DAT PRO UČITELE
webinar

Online setkávání
Metodický portál RVP.cz



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