The 10th USENIX Workshop on Free and Open Communications on the Internet (FOCI'20), 11 August 2020

Opening Digital Borders Cautiously yet Decisively: *Digital Filtering* in Saudi Arabia

Fatemah Alharbi Michalis Faloutsos Nael Abu-Ghazaleh









Home / Saudi Communications Commission activates Internet calls, W

Saudi Communicati Commission activate calls, WhatsApp still



applications including FaceTime, Snape Chat, Skype, Line, Telegram, users who are subscribed to the Kingdom's telecommunications ser

Updated 21 September 2017 JEDDAH: The Saudi Communicatio Technology Commission (CITC) ha

WEATHER WORLD SERVICE A-Z INDEX

ORLD EDITION

Technology 31 July, 2002, 09:09 GMT 10:09 UK s block 2,000 tes



ching on in Saudi Arabia

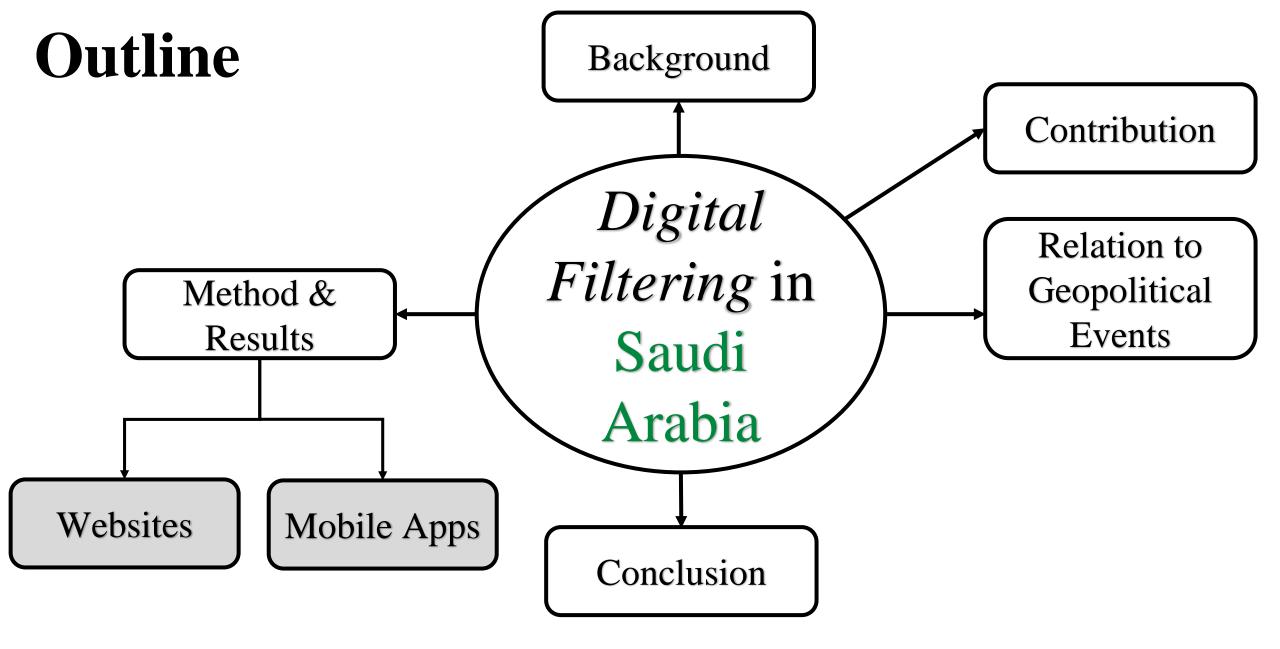
2/17 **Opening Digital Borders Cautiously yet Decisively: Digital Filtering in Saudi Arabia – USENIX FOCI'20**



KINGDOM OF SAUDI ARABIA



Whether such events translate into changes in the *digital filtering* policies?



Background

- The Kingdom of Saudi Arabia is considered one of the most conservative countries in the world
- What is being blocked?
 - Violations of the Islamic values
 - Shares contents considered Immoral:
 - Pedophilia, drugs, pornography, gambling
 - Harming national security



Background

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	Sorry, the requested page is unavailable.	عفواً، الموقع المطلوب غير متاح.
	If you believe the requested page should not be blocked please <u>click here</u> .	إن كنت ترى أن هذه ال <mark>صفحة ينبغي أن لا تُحجب تفضل بالضغط هنا.</mark>
	For more information about internet service in Saudi Arabia, please click here: <u>www.internet.gov.sa</u>	لمزيد من المطومات عن خدمة الإنترنت في المملكة العربية السعودية، يمكنك زيارة الموقع التالي: <u>www.internet.gov.sa</u>

General Filtering Warning Page

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		Dear User,	عزيزي المستخدم،	
		Sorry, the requested page is violating the regulations of Ministry of Culture and Information.	عفواً، الموقع المطلوب مخالف لأنظمة وزارة الثقافة و الإعلام.	
		And to unblock the page, you may send an official request to:	و لطلب رفع الحجب عن الموقع؛ يمكنكم التواصل بشكل رسمي من خلال العنوان التالي:	
		Ministry of Culture and Information - Electronic Publishing Email: <u>emedia@moci.gov.sa</u> Website: <u>www.info.gov.sa</u>	وزارة الثقافة و الإعلام - إدارة النشر الإكتروني البريد الإكتروني: e <u>media@moci.gov.sa</u> الموقع الإكتروني: <u>www.info.gov.sa</u>	

Filtering Warning Page by the Ministry of Culture and Information

Contributions





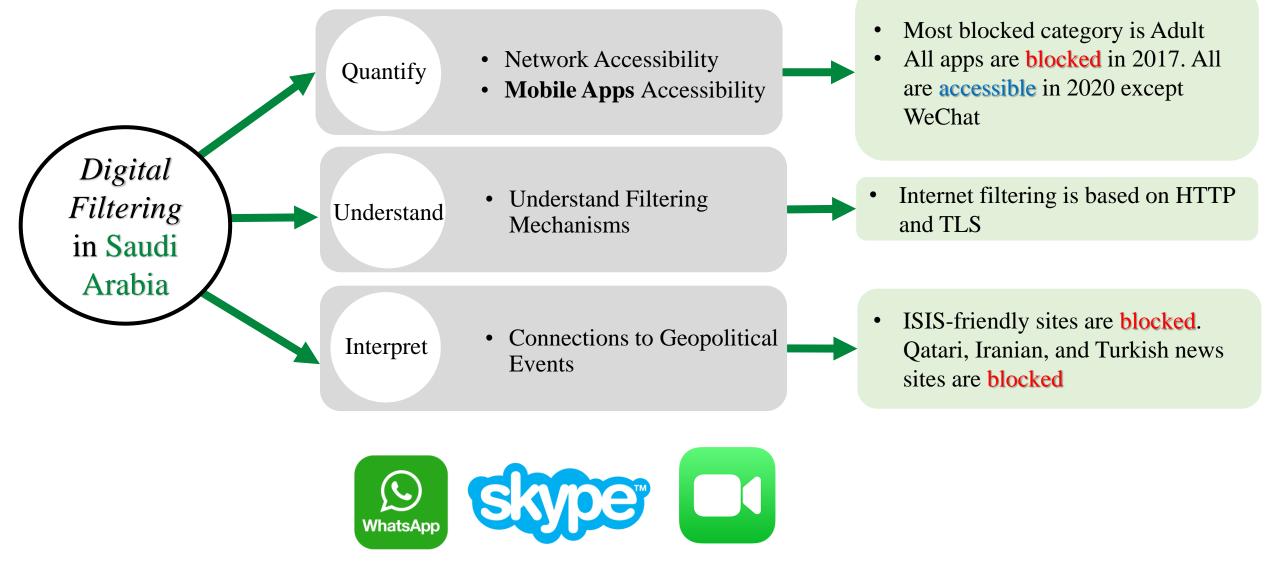


What content is filtered?

How is filtering implemented?

How does filtering evolve over time in response to geopolitical conditions?

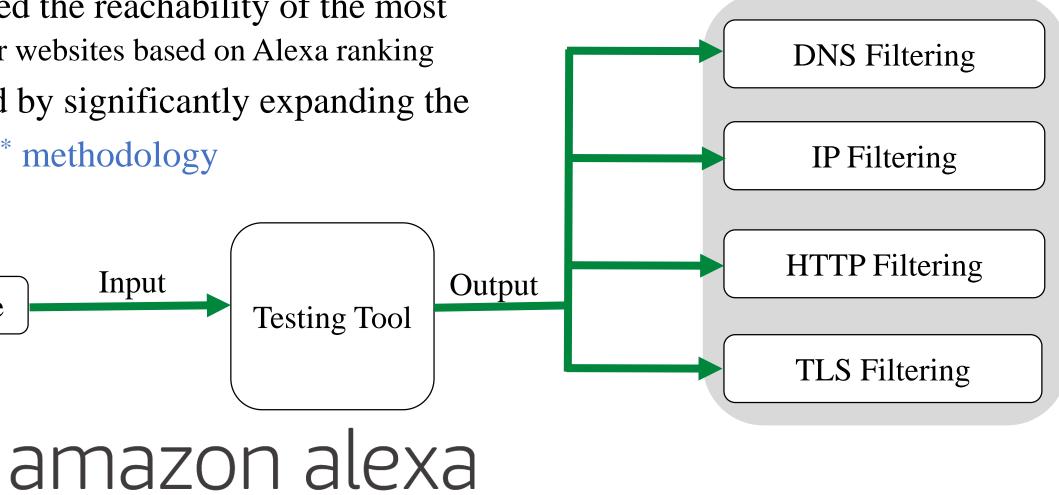
Contributions



Methodology - Sites

- We tested the reachability of the most popular websites based on Alexa ranking
- Inspired by significantly expanding the Samizdat^{*} methodology

Web Site



* Z. Nabi, "The Anatomy of Web Censorship in Pakistan," USENIX FOCI'13

Methodology - Sites

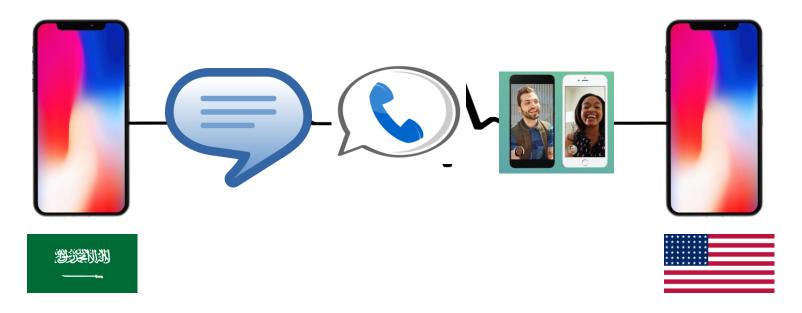
- Vantage Points:
 - Riyadh
 - Jeddah
 - Makkah
 - Al-Khobar

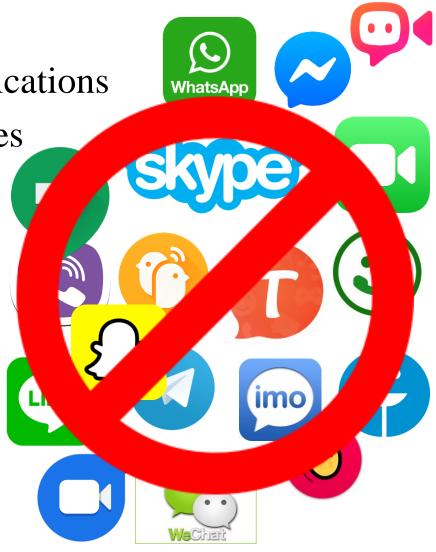


Catagory	DNS						п			НТТР		-	с/цтт	DC		
Category	UDP			ТСР	_	IP		ппг		TLS/HTTPS			Results -Sites			
Adult	5	7	3	7	9	5	2	8	8	427	411	410	4	1	1	
Arts		5	6	5	6	4	9	11	10	12	10	8	10	7	7	
Business	3	10	11	3	8	5	6	13	14	30	26	20	38	29	15	
Computers	0	0	0	0	0	0	1	0	0	10	9	8	8	6	3	
Games	0	0	1	0	0	0	0	0	0	36	31	30	13	11	11	
Global	6	7	7	6	7	7	12	12	12	35	31	28	9	8	6	2018 - 2019 - 2020
Health	4	3	5	4	3	2	7	6	5	13	9	7	17	8	2	
Ноте	1	2	0	1	2	1	4	5	4	9	8	8	16	10	7	
Kids & Teens	2	1	1	2	1	1	3	1	0	7	6	5	12	6	5	
News	0	0	0	0	0	1	1	0	0	21	19	19	20	17	13	
Recreation	0	0	0	0	0	0	6	2	1	20	18	16	18	15	11	
Reference	0	1	1	0	0	0	0	2	1	5	4	4	6	6	6	
Regional	1	1	0	1	1	1	1	3	2	26	25	22	21	20	20	
SA	12	12	12	11	12	13	18	18	18	24	23	19	15	15	14	
Science	3	0	1	3	0	0	3	1	1	5	3	1	6	5	5	
Shopping	1	1	0	1	1	1	1	1	1	46	38	35	48	36	33	
Society	0	0	0	0	0	0	4	1	2	20	20	19	18	17	17	
Sports	0	0	0	0	0	0	1	0	0	8	4	1	11	9	8	

Methodology – Mobile Apps

- We conducted a systematic study on 18 mobile applications
- From 2013-2017, CITC blocked all VoIP call services
- In 2017, CITC announced to lift the ban
- We evaluated their connectivity from 2018 to 2020





Results-Apps

Anneliantian	2013-2017								
Application	Text	Audio	Video						
Viber		Blocked	Blocke						
Tango		Blocked	Blocke						
Facetime		Blocked	Blocke						
YeeCall		Blocked	Blocke						
Skype		Blocked	Blocke						
WhatsApp		Blocked	Blocke						
Line		Blocked	Blocke						
Telegram	Blocked	Blocked	NA						
AllApp		Blocked	Blocke						
Google Duo		Blocked	Blocke						
Houseparty	NA	NA	NA						
WeChat	NT	NT	NT						
SOMA		Blocked	Blocke						
Snapchat		Blocked	Blocke						
Google Hangout		Blocked	Blocke						
Facebook Messenger		Blocked	Blocke						
imo		Blocked	Blocke						
JustTalk	NT	NT	NT						

2018		2019		2020			
Security check		Audio	Video	Text	Audio	Video	
Find one or more current WeChat us meet the conditions below(Doesn't r be WeChat friend)							
 a. Signed up for WeChat over 1 month ago i an international user or over 6 months ago a China Mainland user b. Hasn't completed "Help Friend Register" users in the past month c. Hasn't been blocked in the past month 	f they are for other	Blocked	Blocked			NA	
 d. Has activated WeChat Pay if they are a C Mainland user Request user to scan below QR code 							
WeChat	uong	Blocked	Blocked	Blocked	Blocked	Blocked	

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Relation Between Geopolitical Events and *Digital Filtering*

- ISIS-friendly websites were blocked
- Some Qatari, Iranian, and Turkish News websites

were blocked





Iran

Conclusion

- A longitudinal study of *digital filtering* in Saudi Arabia
- Saudi Arabia has made progress towards opening its digital borders
- Tool: <u>fmhharbi@taibahu.edu.sa</u> (for now) It will be downloadable!
- Observe changes in the filtering policy and connect it with geopolitical events
- Future Work:
 - Server-side filtering

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