amazon.tracking.exposed

First edition: December 2019
Last revision: 13 January 2020.

Executive summary

We knew, from past research, that Amazon.com Inc. was collecting a detailed log of personal activities, called "clickstream." By performing a GDPR Data Subject Access Request (DSAR), we however do not get access to this information. With our experiment, we wanted to verify if Amazon is still keeping track of our specific behavior on the platform.
By recording the search query results, we observed a clear personalization of the content offered to the user. Our profiles were getting served different products despite the fact that they were all performing the same search query, from the same room, at the same time.
We developed a tool to enable other researchers to replicate our experiment. Should our findings be confirmed, Amazon's behavior would constitute incomplete compliance with GDPR in regards to DSARs.

How we tested Amazon personalization algorithm

Introduction

We hypothesize that Amazon uses some personal data for its recommendation system that are not included in the data we can ask to download via a DSAR.

Asking to Amazon what data has about us

By using the Data Subject Access Request interface offered by Amazon, we should retrieve the personal data Amazon has on us. We requested it, amazon sent us a validation email, and after some hours, our data was ready:
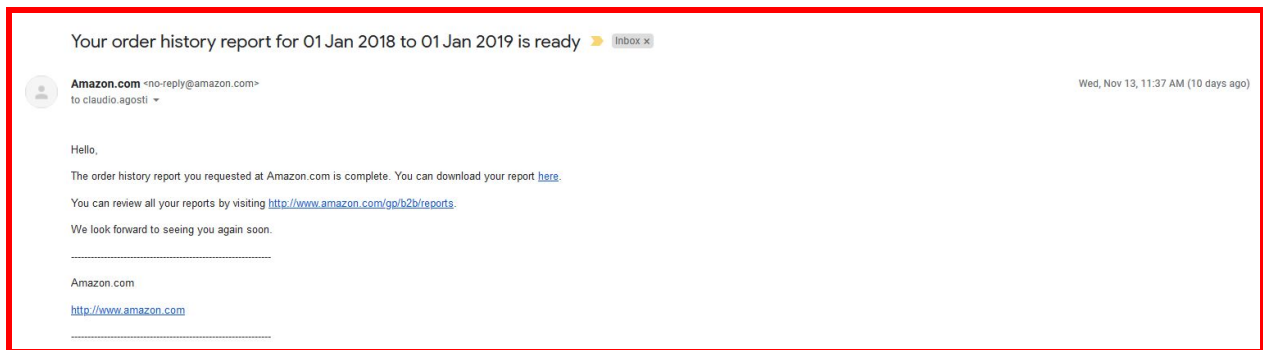
This answer is unsatisfactory. I ask for all the data processed by amazon, but the answer was including only information in regards of my past orders:
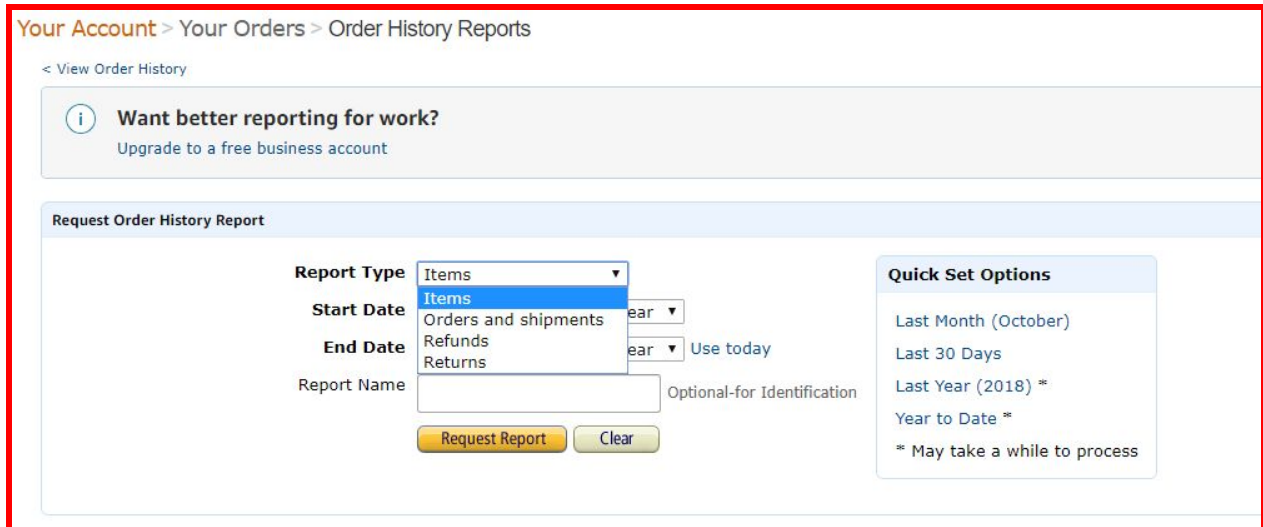
The spreadsheet contains one row for each product bought in the year, and the columns:

```
Order Date     Order ID      Payment Instrument Type     Website
Purchase Order Number     Ordering Customer Email     Shipment Date
Shipping Address Name     Shipping Address Street 1     Shipping
Address Street 2     Shipping Address City     Shipping Address State
Shipping Address Zip     Order Status     Carrier Name & Tracking
Number     Subtotal     Shipping Charge     Tax Before Promotions
Total Promotions     Tax Charged     Total Charged     Buyer Name
Group Name
```

We expected to receive a copy of all the personal data processed by Amazon in relation to the provision of their service, this is why we find the answer unsatisfactory.

Following the link Amazon provides, the downloadable reports are limited to the interaction we had with Amazon shop, and do not mention any other personal data processed by the company.

These data are described in Amazon Europe Privacy policy as the data processed to offer the service.

Still, as shown in a previous article, Amazon had a collection of data describing, step by step, all of our actions performed on the amazon services. Amazon discloses this large dataset only after insisting requests, in two different instances, made by a German and an Italian journalist.

This dataset takes the name of **Clickstream** and includes the day and time when a specific page is visited, the IP address and the device used, the geolocation—if possible—based on the IP address, and the name of the ISP.

The dataset has nearly 50 different kinds of data entries, detailed in a document provided by Amazon, among which: information on the previous and the next page visited, the referrer URL that led us to the page we are viewing, and information on the type of session such as PotentialShoppingSessions or RecognizedShoppingSessions.

Test how Amazon personalize the shopping experience

We assume, if amazon applies personalization, that such personalisation can depend either on personal data or non-personal data.
We organized tests to infer if personal data are used in this automated decision making process.

At the beginning, we tested how different accounts (four of them with the same delivery address), return the same results when they search content on amazon.

We operated a bit on the Amazon service to let a hypothetically present, profiling tool, learn some difference about us. We performed searches, read product reviews, and added/removed products from the cart.

As documented below, we observe a progressive differentiation during our observations, and this lead us to deduce Amazon Europe (the Data Controller we want to keep accountable) is **profiling**, as defined in 17/EN WP251rev.01, quote:

> - it has to be an *automated* form of processing;
> - it has to be carried out on *personal data*; and
> - the objective of the profiling must be to *evaluate personal aspects* about a natural person.

Under Article 12(1) of the GDPR, the controller must provide data subjects with concise, transparent, intelligible and easily accessible information about the processing of their personal data.

In the case of clickstream data collected by Amazon, as defined by ARTICLE 29 DATA PROTECTION WORKING PARTY in their "Guidelines on Automated individual decision-making and Profiling for the purposes of Regulation 2016/679", we may consider these data as indirectly obtained data used for profiling. And the information should be provided within the timescales set out in Article 14(3).

The controller must ensure that they have a lawful basis for this type of processing. The controller must also provide the data subject with information about the collected data, and, if appropriate, the existence of automated decision-making referred to in Article 22(1) and (4), the logic involved, and the significance and envisaged consequences of such processing.

In particular:

> pursuant to Article 15(3), the controller has a duty to make available the data used as input to create the profile as well as access to information on the profile and details of which segments the data subject has been placed into.

[...]

Broadly speaking, profiling means gathering information about an individual (or group of individuals) and evaluating their characteristics or behaviour patterns in order to place them into a certain category or group, in particular to analyse and/or make predictions about, for example, their:
- ability to perform a task;
- interests; or
- likely behaviour.

As our past knowledge suggest, Amazon has a dataset collecting this level of detail, it goes by the name of **Clickstream,** and we suspect this data is still collected and therefore they should be considered a personal data because is linked to the user profile.

No trace of such activities is present in the data returned by Amazon following a Data Subject Access Request.

After this, we saw and recorded how the search query was instead displaying differences. According to the data that Amazon give back to us via DSAR, these differences are not explainable.

We assume that Amazon did record our users' interactions with their website interface (while not acknowledging them in our Subject Access Request), and then used them to personalize our shopping experience by recommending the most relevant product.

The amazon.tracking.exposed tool

We developed a free software tool, whose sole purpose is to collect evidence of amazon personalization.

The tool runs in the browser (firefox or chrome), and memozies what Amazon sends to the user navigating on Amazon pages.
We potentially can extract all the information present in the HTML. At the moment, we focussed our efforts on the list of the products offered, their positioning in the results list, and their price.

This tool is meant for researchers, is not ready for a broader adoption, because it automatically collects Amazon pages when a researcher navigate on *amazon.com* or *amazon.it* websites.

From the browser with our tool, the researcher can access to a page in our server (https://amazon.tracking.exposed) where the evidences are collected.

Recent evidence collected

# — a day ago - 2019-11-22T17:27:00.249Z **Bambola**	Search-Answers-Maps	**62** 30.1 €
3 — a day ago - 2019-11-22T16:33:55.259Z Baby Alive - Magica Frangetta [Bambola Bionda]	Compare	I clienti che hanno visto questo articolo hanno visto anche [14] Chi ha acquistato questo articolo ha acquistato anche [2] Prodotti sponsorizzati relativi a questo articolo [8]
# — a day ago - 2019-11-22T16:33:38.832Z **Dolce Lacrimuccia [Bionda]**	Search-Answers-Maps	**20** 34.3 €
5 — a day ago - 2019-11-22T16:33:00.265Z Hasbro Baby Alive- Dolce Lacrimuccia [Bionda], TU, C0957103	Compare	I clienti che hanno visto questo articolo hanno visto anche [12] Prodotti sponsorizzati relativi a questo articolo [0] Chi ha acquistato questo articolo ha acquistato anche [12]
# — a day ago - 2019-11-22T16:19:34.424Z **Bambola**	Search-Answers-Maps	**62** 29.8 €

The evidence are useless if not properly contextualized with a methodology.
The page reports two kinds of evidence: the search queries and the items viewed.

From the screenshot above, the 22nd of November 2019, at 4PM and the 22nd at 5PM, the account searched for "Bambola", both of the time got 62 products as a result. This list of evidence is unique from each browser, and we had the attention to run Amazon users only in the browser configured with amazon.tracking.exposed.

The euro value reported next to the search query (in the example above: 30,1€ - 34,3€ - 29,8€) is the **average price** for all the product returned in the query. It is calculated as the sum of all the prices available in the result page, divided by the number of products.

This was one of our metric to highlight potential discrimination. For example:

Researcher	Query	Date	Average
Claudio	"Assistente vocale"	22/11/2019 12:30	80,2€
Riccardo	"Assistente vocale"	22/11/2019 12:30	80€
Giulia	"Assistente vocale"	22/11/2019 12:30	80€
Salvatore	"Assistente vocale"	22/11/2019 12:30	62,6€

In regards of the line "Baby Alive - Magica Frangetta (Bambola Bionda)" it refers to an item viewed on the site. The tool records all the product visualized, because we were conducting an

investigation in that direction. But that feature and our findings are not reported in this document.

With the tool we downloaded a spreadsheet (CSV) and then we perform visualizations:

Coordinated test. Search Query "Shampoo"

Product	Value	bun-muf.. 15.7	Pecodo / Average cheese-c.. 10.5	anicott.. 14.3	pepper-b. 14.4
Alama Professional Shampoo Secco per Tutti I Tipi di Capelli - 200 ml	6				
Alfaparf Lisse Design Keratin Terapia Manutenzione Shampoo 250ml	10		▪		
Alpecin 21121, Shampoo alla caffeina, 250 ml	6		▪		
Alpecin caffeina Shampoo 250 ml (pacchetto di 3)	17		▪		
Amazon's Choiceper shampoo	Null		▪		
Bed Head Re-Energize Shampoo - 750 ml	13	▪			
BRILLIANCE Shampoo capelli normali e fragili 1000ml	24	▪	▪	▪	▪
DBLabo Shampoo Anticaduta Capelli per Uomo e Donna - Rinforzante Contro la Caduta, Stimolante per la Ricrescita - Made in Italy - 250ml	23	▪		▪	▪
Echosline Ki-Power Phase 1 - Shampoo cheratinico ricostruzione molecolare, 1000 ml	12	▪		▪	▪
Elvive - Shampoo, Delicato, Antiforfora, Per Tutti I Tipi di Capelli - 250 ml, 1 pezzo	2	▪	▪	▪	▪
Elvive Low Shampoo Olio Straordinario, Shampoo senza Schiuma e senza Solfati per Capelli Secchi - 400 ml	3		▪		
Extreme Shampoo 1000 ml Redken		▪		▪	
Faith in Nature - Shampoo Naturale al 100% Con The Biologico Estratto Direttamente dalla Pianta Per tutti I Tipi di Capelli - Per Lavaggi Frequenti - Senza Parabeni - Vega.	6	▪	▪		
Fanola Oro Therapy - Shampoo Illuminante Oro Puro, 1000 ml	12	▪			
	9		▪	▪	▪
FANOLA Shampoo Ristrutturante 1000ml	8		▪		
FLEX - SHAMPOO cabellos teñidos 650 ml-unisex			▪		
Franck Provost Expert Hydratation Shampoo Professionale per Capelli Normali Fini - 750 ml	3			▪	▪
Franck Provost Expert Lissage+ Shampoo Professionale Arricchito con Latte Idratante, 750 ml	6	▪		▪	▪
Franck Provost Shampoo Professionale per Capelli Secchi - 750 ml	3			▪	▪
Garnier Ultra Dolce Shampoo 2-in-1 al Latte di Vaniglia e Polpa di Papaya per Capelli Lunghi e Punte Fragili, Senza Parabeni, 300 ml [Confezione da 2]	3		▪	▪	▪
Garnier Ultra Dolce Shampoo 2-in-1 per Bambini all'Albicocca e Fiori di Cotone, Senza Parabeni, Ipoallergenico, 300 ml [Confezione da 2]	3			▪	▪
Garnier Ultra Dolce Shampoo al Cacao e Olio di Cocco per Capelli Lisci o da Lisciare, Senza Parabeni, Estratto Naturale, 300 ml [Confezione da 2]	3		▪		
Garnier Ultra Dolce Shampoo all'Estratto di Camomilla e Miele per Capelli Chiari, Senza Parabeni, Estratto Naturale,300 ml [Confezione da 2]	3			▪	▪
Garnier Ultra Dolce Shampoo alla Mandorla Dolce e Fiori di Loto per Tutta La Famiglia, Senza Parabeni, Coloranti e Siliconi, 300 ml [Confezione da 2]	3			▪	▪
Garnier Ultra Dolce Shampoo Meraviglioso all'Olio d'Argan e di Camelia per Capelli Secchi, Senza Parabeni, Estratti Naturali, 300 ml [Confezione da 2]	3		▪	▪	▪
Garnier Ultra Dolce Shampoo Nutriente Oliva Mitica per Capelli Inarididi e Sensibilizzati, Senza Parabeni, 300 ml [Confezione da 2]	3		▪		
Garnier Ultra Dolce Tesori di Miele Shampoo Ricostituente per Capelli Fragili Che Si Spezzano - 250 ml	2		▪		
Head & Shoulders Classic Clean Antiforfora Shampoo, 1000 ml	9	▪	▪	▪	▪
Head & Shoulders Classic Clean Shampoo 2 in 1 Antiprurito ed Antiforfora, con Eucalipto, Pacco da 6 x 225 ml	19	▪			
Head & Shoulders Classic Clean Shampoo Antiforfora 2 in 1, Pacco da 6 x 225 ml	Null	▪			
Head & Shoulders Men Ultra Anticaduta Shampoo Antiforfora con Caffeina, Pacco da 6 x 225 ml	Null	▪			
Head & Shoulders Shampoo Antiforfora, Menthol Fresh - 250 ml	1		▪		
Head & Shoulders Suprême Ripara Shampoo Antiforfora, con Olio di Argan, con Ingredienti Sublimatori, Pacco da 6 x 225 ml	18	▪		▪	▪
Head&Shoulders Antiforfora 2In1 Antiprurito Shampoo e Balsamo - 225 ml	1		▪	▪	▪
Inebrya ICE CREAM Dry-T Shampoo 1000 ml	9	▪	▪		
Intesa Pour Homme Bagno Doccia e Shampoo, Rivitalizzante, Idratazione Quotidiana, Ginseng - 500 ml	2		▪		
Kerastase 55580 Bain Volumifique Shampoo, 250ml	18	▪		▪	▪
Kerastase - NUTRITIVE - Bain Satin 2 - Shampoo nutrizionale con Irisome per capelli sensibilizzati e secchi, 1 x 250 ml	17	▪		▪	▪
Kerastase Discipline - Bain Fluidealiste - Morpho-Keratine - Shampoo per per i capelli crespi e indisciplinati, 1 x 250 ml		▪		▪	▪
Kerastase Nutritive Shampoo - 250 ml	16	▪	▪	▪	▪
Kerastase Resistance Bain Force Architecte, Shampoo riparatore per capelli indeboliti e danneggiati, 250 ml	18	▪			
	12				

Legend:
- Product is the name of the product returned in the search query
- Each profile is represented by a different color. The size of the square is proportional to the value in Euros. If a square is not present, it means that such profile didn't get the product in the search query.
- Value is the amount of euro.
- Circled in green, you can see how the profile displayed in orange was getting a lower average price.
- Circled in red, few cases of dynamic pricing. A profile of ours was receiving a different price.

This additional graph shows our similarities and our differences when looking for "smartphone":

Product	Product Id	Value	Pseudo / Average bun-muf.. 172.6	cheese-c.. 120.3	manicott.. 177.4	pepper-b.. 153.4
4G Smartphone Offerta del Giorno, (2019) Blackview A60 pro Android 9.0, 6.1 ″ ″ Waterdrop schermo DUAL SIM Cellulari, MTK6761 quad core 2.0 G..	B07SD49B6J	84	■		■	■
【2019】DOOGEE S40 (3GB + 32GB) robusta 4G Android 9,0 Rugged Smartphone in Offerta - 5,5″ HD+ (Gorilla Glass 4) IP68 impermeabile Resistenti C..	B07T1BBD4K	109	■		■	■
Alcatel 1S 2019, 5.5 ″ ″ , 4G, 32 GB ROM + 3 GB RAM, Octa-Core, Metallic Black, Versione Italiana	B07QJPSNB1	89	■			
		82		■	■	■
Amazon's Choiceper smartphone	B07RDKHDWS	123		■	■	
		115	■			
AmazonBasics - Supporto per cellulare, per iPhone e dispositivi Android | Nero	B07DHFXM2Y	7		·		·
AmazonBasics Deluxe - Vassoio in bambù per vasca da bagno	B07FM3HHW9	16		·		
Cellulari Smartphone Offerte, UMIDIGI X Sensore di impronte sotto lo schermo 6.35 ″ ″ AMOLED 48MP Tripla Fotocamera posteriore 128GB NFC Hel..	B07Y9XW6GG	160	■	■	■	■
CUBOT J5 Android 9, 5.5 Pollici, Supporto Face ID, RAM 2GB ROM 16GB, La batteria 2800mAh, 3G Smartphone Nero	B07WLXTLRM	59		■		
CUBOT X19 5.93 Pollici FHD+, 4G-LTE Smartphone, Android 9.0, Octa-Core 2.5GHz, 4000 mAh, 4GB RAM 64GB ROM, 5V/2A Type-C Ricarica Rapida, Fa..	B07WD7KPD6	119	■		■	
DIVI Supporto Auto Smartphone, 360 ° di Rotazione Porta Cellulare Universale da Auto Telefono Supporto gravità [Bocchetta dell'Aria] per Phone x, ..	B07BLMC5ST	16		·		
Eono by Amazon - Supporto Telefono, Dock Telefono : Universale Supporto Dock per Phone XS XS Max XR X 8 7 6 6S Plus 5 5S 4 4S, Huawei, Samsung ..	B07NTVTKPS	10		·		·
Eono Essentials - Supporto ad anello per telefono cellulare, impugnatura universale, 360 regolabile, per tutti gli smartphone da 4 a 8 ″ ″ , Samsung, ..	B07V9NTK8M	10				
Eono Essentials - Supporto per anello, per cellulare con impugnatura universale, regolabile a 360º, per tutti gli smartphone da 4~8 ″ ″ , Samsung, Hu..	B07V9NTK8M	10		·		
Eono Essentials Supporto ad Anello, Supporto in Metallo : Universale Supporto per Phone XS XS Max XR X 8 7 6 6S Plus 5 5S 4S, Samsung S9 S8 S7 S6,..	B07VC7NYHL	10		·		
Hitchy Treppiede Smartphone Cellular 42Pollici 106cm Alluminio Leggero Cavalletto per Telefono per Iphone/Samsung/Huawei, Camera con Telecom..	B07D29QCYL	16		·		
Huawei P30 Lite (Blue) Smartphone + cover trasparente, 4GB RAM, memoria 128 GB espandibile, Display 6.15 ″ ″ FHD+, Tripla fotocamera posterio..	B07QWZ5JZV	259	■	■	■	■
Lente di ingrandimento dello Schermo del telefono12 ″, Schermo del Telefono Cellulare Pieghevole in Legno massello, Adatto per Guardare Video di F..	B07NNCDMZ7	16		·		
Samsung Galaxy A20e Display 5.8 ″ ″ , 32 GB Espandibili, RAM 3 GB, Batteria 3000 mAh, 4G, Dual SIM Smartphone, Android 9 Pie, (2019) [Versione Italiana], White	B07RLXN1W4	139			■	■
		Null	·			
Samsung Galaxy A40 Display 5.9 ″ ″ , 64 GB Espandibili, RAM 4 GB, Batteria 3100 mAh, 4G, Dual SIM Smartphone, Android 9 Pie, (2019) [Versione It..	B07PSK3QT2	189		■	■	■
Samsung Galaxy A50 Display 6.4 ″ ″ , 128 GB Espandibili, RAM 4 GB, Batteria 4000 mAh, 4G, Dual SIM Smartphone, Android 9 Pie, (2019) [Versione Italiana], Nero.	B07PFQWTGC	259	■			
		253			■	■
Samsung Galaxy M20 Display 6.3 ″ ″ , 64 GB Espandibili fino a 512GB, RAM 4 GB, Batteria 5000 mAh, 4G, Dual SIM Smartphone, Android 8.1.0 Oreo [..	B07N1FCSDC	174	■		■	
Samsung Galaxy M20 Display 6.3 ″ ″ , 64 GB Espandibili, RAM 4 GB, Batteria 5000 mAh, 4G, Dual SIM Smartphone, Android 8.1.0 Oreo Nero (Charcoa..	B07N1F9NPD	174	■	■	■	
Samsung Galaxy M30s Display 6.4 ″ ″ , Blu, 64 GB Espandibili, RAM 4 GB, Batteria 6000 mAh, 4G, Dual SIM, Smartphone, Android 9 Pie - Versione Ita..	B07XDT56JF	229	■	■	■	■
Smartphone Android 9.0, 4G Cellulare Economico Blackview A60 Pro 2019, 3GB +16GB, 15.7cm HD+ Telefoni Offerte, 256 GB Espandibile, Batteria 4..	B07RQWY8XN	84	■		■	
Smartphone in Offerta,DOOGEE X20 Telefonia Mobile, 3G Smartphone Android 7.0 (5.0 Pollici HD Schermo, MT6580 Quad core, 1GB RAM + 16GB RO..	B07W4H977H	45		·		
Smartphone Offerta del Giorno 2019, Blackview A60 6.1″ Waterdrop Schermo, 13MP+5MP, 4080mAh Batteria Cellulari Offerte, 128GB Espandibili C..	B07QDB7HB3	69	■	■	■	■
Smartphone Offerta Del Giorno UMIDIGI A5 PRO, Triple Camera(16MP+8MP+5MP), 4GB+32GB(Espandibile 256GB), Batteria 4150mAh, Android 9.0 ..	B07T9JHQVT	119	■		■	
TEENO Cellulari Offerte 4G Smartphone 6.2 Pollici 3 GB RAM 32 GB ROM, Android Quattro Core Una Camera	B07RCCVL84	69		■		

The collection keeps showing:
- Products might be excluded or included in the search results despite the profiles were European citizens, searching from the same location, connected with the same internet access.
- The difference in average pricing is even more remarkable with this class of product. The orange profile, was receiving the lesser wealthy product (for example, smartphone tools instead of actual smartphones).

In this last piece of evidence five profiles were involved. (three Tracking Exposed researchers, plus Claudio and Silvia). They searched for **Bambola** (Doll).

Comparazione tra analisti, Claudio e Silvia, cercando "Bambola"

Query	Product	Product Id	Value	bun-muffi...	cheese-cu...	Pseudo manicotti-...	pepper-ba...	tortillas-c...
Bambola	4 pezzi VIVIANU angioletto di Natale peluche bambola giocattolo albero di Natale ciondolo ornamento creativo principale decorazione.	B07WNQKPH2	5					
	Amazon's Choiceper Bambola	B071XYK1X5	18	•	•	•	•	•
	Androni - Passeggino Sunny Buggy, Colori Assortiti	B00J4VDZLM	9		•			
	Androni Giocattoli 2750-0002 - Passeggino per Bambolotto, Modello Assortito	B007RE2ZQ4	15		•			
	Antboat 22 Pollici 55cm Bambola Reborn Femmina Vinile Silicone Morbido Realistico Fatto a Mano Occhio Blu Giocattoli per Neonati Toddler Babie..	B07ZKCYN15	51					•
	Bambola Entity, bambola in silicone full body da 165 cm, bambola non gonfiabile, masturbazione maschile, prodotti per adulti	B0819ZR4MK	9.310	•		•	•	
	Bambola Lunghi riccioli Parrucca Fai da Te Bambola Modellazione Accessori-Alta Temperatura del Filo 15 Centimetri Capelli di falsificazione	B07MR6PVTC	2		•			
	Bambole MOBILI Bambole in Legno, Bianco / Rosa	B008A20Y2Y	44					•
	Barbie Dreamtopia Principessa Gran Galà Bambola con Accessori, Giocattolo per Bambini 3+ Anni, GFR45	B07MK7NNC6	18	•	•	•	•	•
	Barbie- Babysitters Pappa e Nanna Playset con Bambola Skipper, Seggiolone, Lettino e Bebè con Boccuccia Cambia Colore, Multicolore, FHY98	B0777STP6T	21	•	•	•	•	•
	Bella vestiti per bambole per 18 pollici americano ragazza vestiti per bambole	B01KZ2B5WO	2		•			
	Berenguer 18053 Bambola Neonato con Copertina, Colore Caucasico	B00TVNN2G6	43	●	●	●	●	●
	Bianco Supporto Bambola Sostegni Regolabile 7,9-10 Pollici	B00ENAYDDS	1		•			
	Bigjigs Toys Poppy 28cm Bambola	B00563P4AC	12	•	•		•	•
	Chicco Gioco Kiklà La Mia Prima Bambola	B001R4BA8Y	25	•		•	•	
	DC Super Hero Girls Bambola Batgirl, 30.5 cm, DLT64	B01AWGZXP8	6	•	•	•	•	•
	deAO Baby Set 5in1 Include Culla, Seggiolone, Altalena e Sedia a Dondolo Giocattolo d'Imitazione per Bambole Bebe Gioca a Essere Mamma e papà ..	B07TWMPSB3	26					•
	deAO Borsa a Mano con Casa delle Bambole Incorporata Set Prtatile Design 2in1 con Serratura e Maniglia, Casa con Funzioni Luminose e Sonore, In..	B07PLJSMHB	29	•		•	•	•
	Decdeal Case delle Bambole,Fai da Te in Miniatura Casa delle Bambole Kit,Mini 3D Casa in Legno con Mobili Luci A LED Regalo di Compleanno di Nat..	B07G9FZJNF	18	•	•	•	•	•
	Demiawaking Bambola di Simulazione in Silicone Bambola Reborn Realistica Bambolotto Morbida Regalo Giocattolo per Bambini 30cm	B07B2T849F	12	•	•	•	•	
	Disney Frozen 2 - Anna (Fashion Doll con Capelli Lunghi e Abito Blu, Ispirata al Film Frozen 2)	B07RSVN326	12		•			
	Disney Frozen 2 - Anna Cantante (Bambola Elettronica con Abito Viola, ispirato al Film Frozen 2)	B07RQYHGKM	12		•			
	Disney Frozen 2 - Elsa (Fashion Doll con Capelli Lunghi e Abito Blu, ispirata Al Film Frozen 2)	B07RB78VR6	15		•			
	Disney Frozen 2 - Elsa Cantante (Bambola Elettronica con Abito Azzurro, ispirato al Film Frozen 2)	B07RQYH641	19	•	•	•	•	•
	Enchantimals- Bambola Cherish Il Ghepardo con Amico Cucciolo, Playset per Bambine, FJJ20	B0756DLD4Y	7	•	•	•	•	•
	Enchantimals- Bambola Peeki Il Pappagallo con Amico Cucciolo, Playset per Bambine, FJJ21	B0756JCFF5	8		•			
	Enchantimals- Bambola Sancha Lo Scoiattolo e Cucciolo, Playset per Bambine, FMT61	B076MQMY3D	7		•			
	Enchantimals- Bambola Winsley Il Lupo con Amico Cucciolo, Multicolore, FRH40	B077PSC2SL	8	•	•	•	•	•
	Enchantimals-II Coniglietto con Amico Cucciolo, Bambola da 15 Cm con Accessori, FXM73	B079KH8Y2N	10		•			
	Famosa 700009027 - Nenuco Pannolini Colorati	B006LXCHWY	6		•			
	Famosa 700012131 - Nenuco Gemelli Base, accessori assortiti	B00SN21WJK	28	•		•	•	
	Famosa 700013105 Nenuco Coccole	B01IIHJYLM	38			•	●	
			40	●				
	Famosa- Nenuco Primo Abbraccio Bambola, Multicolore, 700014043	B079X4RYBF	22	•	•	•	•	•

Legend:
- Circled in red, among the standard dolls, three profiles out of five also get a sex doll. It is unclear to us the reason of such personalization, and if personal data were involved in selecting a product belonging to a very different sub-category (under Health & Household -> sexual wellness -> Adult toys).
- Circled in green, the same product (with the same product ID) was displayed with different price. This looks to be the effect of the feature named Dynamic Pricing.

Small note on Dynamic Pricing

The same product offered at different prices to an individual performing the same search might look like an unfair market behavior. Actually, as part of our experiment, the profile identify with the blue color was traveling, and the Postal Code configured on his profile was not the one of Rome.

From what we know, the merchants might offer different discounts to each geographical area. We are not considering this finding as part of our investigation because:
- The merchant makes this decision, therefore it is outside of the scope of this document look to them. We are focusing on Amazon rather than merchants' policies.
- The selectors used to apply differentiated discounts are unknown to us, so we shouldn't assume a personal data violation until we can produce new evidence.

Findings and questions for the Data Protection Authorities

Our findings display how Amazon is personalizing the shopping experience.
Amazon Europe, the Data Controller, has a duty to make available the data used as input to create the profile as well as access to information on the profile and details of which segments the data subject has been placed into.

Using both the interfaces provided in the website amazon.it, we couldn't get such information. We assume the clickstream should be part of the dataset under our control, because the actions recorded allows the company in evaluating our characteristics, and behaviour patterns, in order to place them into a certain category, and test on us their prediction.

Amazon clickstream data are not under our control as the GDPR should allow us. We cannot access them, rectify them, nor delete them.

Minor issues

1. The Amazon interface mentioning "our personal data" actually lead the user to functionality such as "see your last research" and "delete these items from personalizing your results," but that is not the detailed report we expect.

2. On what basis and to what extent can the dynamic price target users, beside their geographical location?

3. Despite amazon.it (data controller Amazon Europe) and amazon.com should be considered as two separate entities, it allows a profile to login using the same email and password, but it is unclear which and how data are differently connected to it. In there, it display different browsing history and order register. Still, the data in amazon.com are not included in the dataset provided by amazon.it.
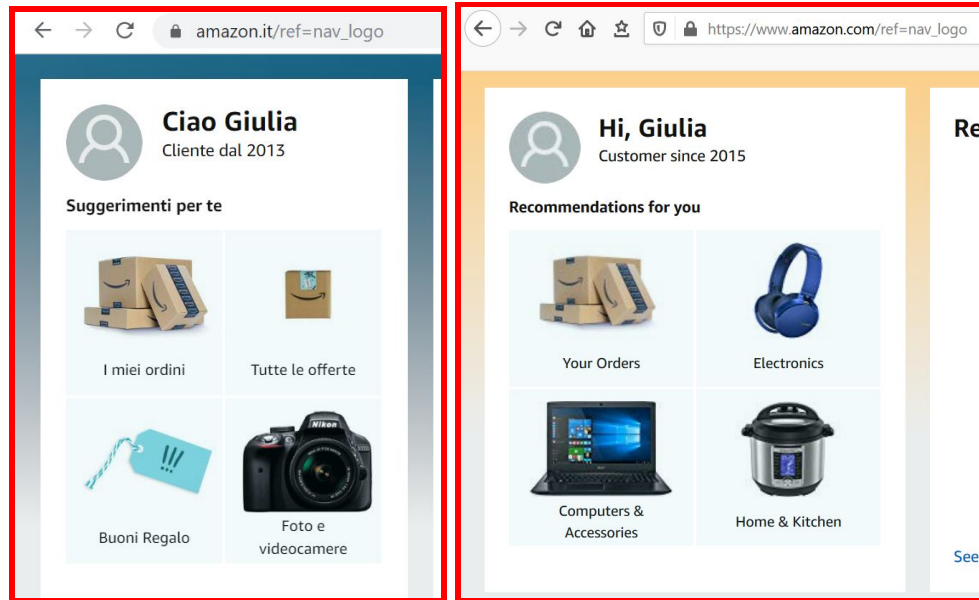
Additional tests

During our research we also tested other conditions. We are reporting here there, in support of researcher which might want to replicate our experiment (the software used is free software)

Chronology and data deletion

To test this hypothesis we recorded some interaction with the platform through the use of Amazon Tracking Exposed. We compared logged-in profiles with different interaction and purchase histories made in different periods. We also reset all the variables that Amazon allow us to delete or exclude from the personalization process:

1. We deleted the list of the items viewed clicking on each user's:
   Amazon.com / Browsing History / Manage history / Remove all the item from the view/
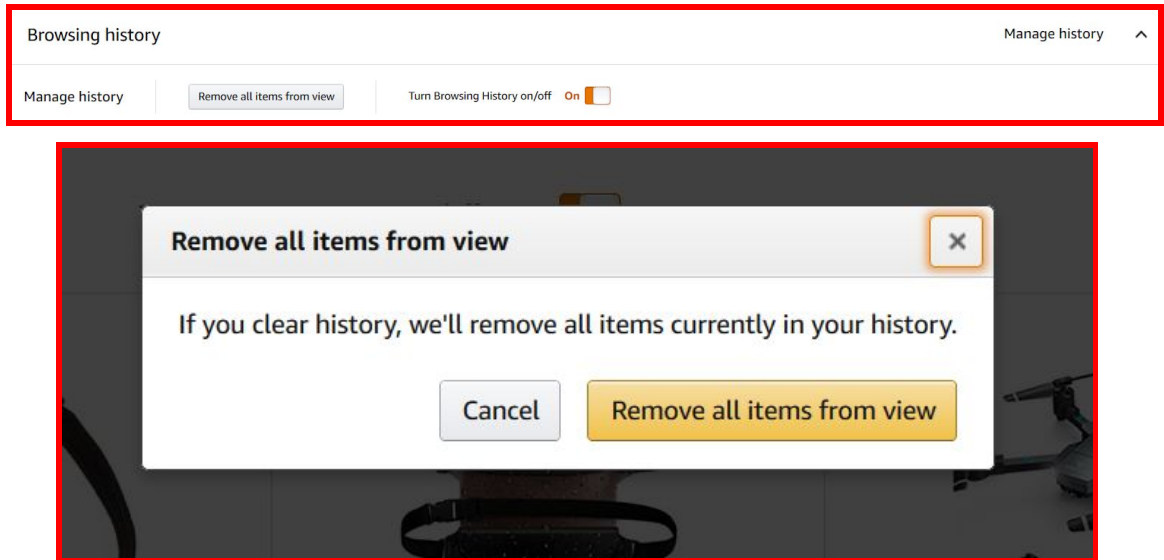
2. We exclude our previous purchase from the data used to suggest items clicking on each user's Amazon.com / Improve your recommendations /
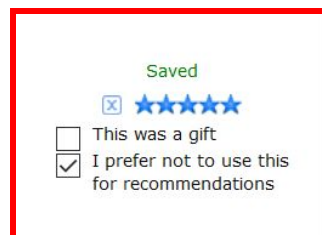
Amazon often refers to those two options as a way to clean the profile and control the personalization process. But this interaction it is not a real control/update/delete functionality of your data, because even if the user asks to 'delete' the content ordered still appear in the "orders log."

Usage of Cookies in non logged browsers

If two people access to Amazon without performing login, with a browser without any cookies, and perform a search query from the same IP address, the results are exactly the same.

We consider this as the *least personalized version* of Amazon shopping experience.

About us

The project lead is Claudio Agosti, research associated with the University of Amsterdam. He meets EDPS at the beginning of the year, talking about his research results in algorithm analysis at the "Europe votes 2019: How to unmask and fight online manipulation"—a conversation facilitated by the EDPS between data protection authorities, electoral regulators, audio-visual regulators, media & platforms in the fight against online manipulation of personal data in elections. Among participants were Elizabeth Denham, UK Information Commissioner's Office, and Mar España Martí, Commissioner of the Agencia Española de Protección de Datos.

We develop this research for the Italian National Television (RAI) and as part of the European sponsored project ALEX. ALEX project has been awarded a Proof of Concept grant of the European Research Council within the H2020-EU.1.1. - EXCELLENT SCIENCE programme. ALEX stands for "ALgorithms EXposed. Investigating Automated Personalization and Filtering for Research and Activism."

Notable participants of the analysis are:
Riccardo Coluccini, freelance journalist, author of the pre-GDPR access request to Amazon.
Salvatore Romano, a student at the intersection between psychology and technology.
Giulia Corona is working with our team in communication and analysis.

We released a working prototype of our tool. It is accessible at the address:
https://amazon.tracking.exposed and it is not meant for general purpose yet. If anyone wants to replicate this experiment, is invited to run the source code on their own systems. The technology is here accessible, in AGPL v.3 license: https://github.com/tracking-exposed/amtrex/ and the copy of our website at: https://github.com/tracking-exposed/amazon.tracking.exposed

Complaint to the appropriate authority

As Data Subject, we should raise our complaint to our national data protection authority. This document is not a formal complaint, it is a commentary on our experiment, part of a journalist investigation.
The journalist organization organizing (RAI) the documentary decided to pick the EDPS for a comment, instead of our national DPA, because our Parliament has not yet appointed a new DPA board after the old board's mandate expired last May. At the moment the DPA president Antonello Soro is holding the DPA role *ad interim*, because his substitute has not yet been appointed by Parliament.
We would likely bring this complaint to the Italian Data Protection Authority, and this will follow the official procedure.

How to find the Data Subject Access Request form?

According to the GDPR Article 12, the user has the right to access, modify, and delete their own data. However, Amazon hides the Data Subject Access Request form in a chain of links that are quite easy to miss.

In its italian privacy policy, Amazon mentions the possibility for the user to find more information on how to access their data in two separate paragraphs:

Despite *dati personali* (personal data) is mentioned, the interface linked is the utility about "delete your previous research" and "delete your previous order". In the English version below, served in amazon.com, is used the more appropriate term "Information":

The page continues as:

In both cases the user ends up on the "How to protect your privacy" page.

Proteggere la tua privacy

L'utilizzo dei dati ci serve a rendere la tua esperienza di acquisto su Amazon migliore e più conveniente. Proteggere la tua privacy e la sicurezza dei tuoi dati è sempre stata una nostra priorità.

La fiducia che riponi in noi affidandoci i tuoi dati ci consente di mostrarti prodotti che, sulla base dei tuoi acquisti precedenti, ti potrebbero interessare, siano essi una nuova linea di abbigliamento, un film, una serie TV o un libro appena uscito. Questo ti permette inoltre di non dover inserire i tuoi metodi di pagamento e gli indirizzi di consegna ogni volta che effettui un ordine.

Scopri di più su come usiamo i tuoi dati >

Quali dati utilizza Amazon?

Amazon usa i dati che ci fornisci in diverse occasioni, ad esempio quando compri qualcosa, scegli un indirizzo di consegna, pubblichi una recensione, ascolti una canzone o ci contatti per chiedere aiuto.

Usiamo i tuoi contatti e i tuoi dettagli di consegna, le tue preferenze di contenuti digitali e la tua cronologia di acquisto per offrirti un'esperienza migliore nonché per inventare nuovi modi che te la semplifichino in futuro.

Scopri di più su quali dati raccogliamo e usiamo >

Cosa fa Amazon per proteggere la sicurezza dei tuoi dati?

Criptiamo i dati per garantirne la sicurezza ogni volta che vengono trasmessi tra i tuoi dispositivi e i nostri sistemi. La protezione dei dati dei nostri clienti è una parte fondamentale della nostra attività, che non prevede la vendita a terzi dei tuoi dati personali.

Scopri di più su come proteggiamo la tua privacy >

Come faccio a visualizzare e gestire i miei dati su Amazon?

Puoi accedere ai tuoi dati quali, ad esempio, i tuoi contenuti digitali, la cronologia dei tuoi ordini e le tue preferenze di comunicazione e gestirli nella sezione Il mio account o gestire le impostazioni privacy del tuo dispositivo Amazon direttamente sul dispositivo che stai utilizzando. Per qualsiasi informazione che non riesci a trovare nella sezione Il mio account o sul tuo dispositivo puoi contattarci e saremo felici di aiutarti.

Scopri di più su come accedere e gestire i tuoi dati >

Visita le nostre pagine di Aiuto >
Per maggiori informazioni ti invitiamo a leggere la nostra Informativa sulla privacy >

All the links available in the 4 main sections displayed above <u>are connected to different support pages completely unrelated to how to exercise your GDPR rights</u>.

The only way to reach the Data Subject Access Request form is by clicking the "Visit our Help pages" at the bottom of the page. The user is redirected to the "<u>Assistance and Customer Service</u>" page where they can find more information on 4 specific topics: Legal, E-mails from Amazon, Security, and Privacy.

Assistenza e Servizio Clienti

Cerca nelle pagine c | Vai

‹ Tutti gli argomenti di Aiuto

Resi e Rimborsi
Gestire i miei ordini
Pagamenti, IVA e Prezzi
Area Legale, Sicurezza, Privacy
Spedizione e Consegna
Buoni Regalo, Ordini Regalo e Liste
Gestire il mio account
Help in English
Assistenza Amazon Business
Guida alla pubblicazione
Assistenza dispositivi Amazon
Amazon Appstore, Store Musica Digitale Amazon e Amazon Drive
Caratteristiche del sito

Soluzioni rapide

I miei ordini
Traccia o restituisci ordini

Resi e rimborsi
Restituisci o sostituisci articoli

Informazioni corriere
Informazioni corriere spedizione

Gestisci iscrizione Prime
Cancella o visualizza vantaggi

Impostazioni di pagamento
Aggiungi o modifica metodi di pagamento

Area Legale, Sicurezza, Privacy

Fai da te Se hai ricevuto un'e-mail che fa riferimento a un ordine che non hai effettuato, molto probabilmente quell'e-mail non è stata spedita da Amazon. Per segnalarci l'accaduto, inoltrala come allegato a stop-spoofing@amazon.com. Per maggiori informazioni, consulta

[Segnala un'e-mail fraudolenta] [Proteggi il tuo sistema]

Area Legale
Garanzia Legale
Amazon.it e la Garanzia
I tuoi diritti - Diritto di Recesso
Amazon.it Informativa sulla Privacy
Condizioni di Generali Uso e Vendita
›Altro...

E-mail provenienti da Amazon
Segnala un'e-mail fraudolenta
Identificare e-mail non provenienti da Amazon ▶ Video
›Altro...

Sicurezza
Proteggi il tuo sistema
Sicurezza della password
Browser supportati
Autenticazione multi-fattore
›Altro...

Privacy
Come posso richiedere i miei dati?
Come vengono utilizzati i miei dati da parte di Amazon?
Quali dati raccoglie e utilizza Amazon?
Come viene garantita la sicurezza dei miei dati da parte di Amazon?
Come faccio a visualizzare e gestire i miei dati su Amazon?
Impostazioni privacy dei dispositivi e dei contenuti digitali Amazon
Come posso richiedere i miei dati?
Amazon e i tuoi dati

Within the Privacy section, there's a link called "How can I request my data?" that finally describes the steps to file a data access request (points 1 to 3 in the picture below). In addition, the user has other options to directly access and manage some of their data directly from within their own Amazon account sections—these options, however, reduces the right to access to some very specific and incomplete data.

Come posso richiedere i miei dati?

Puoi accedere direttamente alla maggior parte dei tuoi dati online tramite il tuo account Amazon, cliccando su Il mio account.

Per ulteriori istruzioni, visita la pagina Come faccio a visualizzare e gestire i miei dati su Amazon?.

Se desideri accedere a dati che non sono immediatamente disponibili da **Il mio account** o sul tuo dispositivo (ad esempio la cronologia delle ricerche), oppure vuoi darci maggiori dettagli sulla tua richiesta relativa alla privacy, puoi farlo attraverso il nostro sistema automatizzato:

1. Fai clic su **Richiedi i tuoi dati**

2. Seleziona le informazioni che desideri ricevere (ad es. Dati Kindle)

3. Dato che proteggere la tua privacy e la sicurezza dei tuoi dati è sempre stata una priorità assoluta per Amazon, ti invieremo un'email con un link per verificare la tua richiesta.

Per accedere ai tuoi dati tramite il tuo account, segui i link riportati qui sotto:

- Informazioni su sicurezza e accesso: clicca sulla sezione **Accesso e impostazioni di sicurezza** da Il mio account
- I tuoi indirizzi
- I miei metodi di pagamento
- I miei ordini
- Le tue liste
- Comunicazioni e preferenze di pubblicità: Clicca su **E-mail di avvisi, messaggi e annunci** da Il mio account
- Contenuti digitali e dispositivi: dalla sezione **Contenuti e dispositivi** de ll mio account, puoi accedere ai tuoi contenuti digitali e i tuoi dispositivi, oltre che alla pagina relativa alla Privacy di Alexa.
- Amazon Drive and Prime Photos
- Impostazioni account Amazon Business
- Suggerimenti personalizzati: clicca su Migliora i suggerimenti per te
- Articoli Visualizzati

Once the user clicks on "Request your data" they are promptly asked to choose what kind of data, basically restricting the possibility to exercise a thoroughly and effective right to access. In fact, most of the options available are linked to data that is already reachable from other sections within Amazon platform and, what's even worse, those are all pre-fixed type of data that Amazon chose.

Richiedi i tuoi dati

Seleziona i dati che desideri ricevere. Non dimenticare che puoi accedere immediatamente, così come aggiornare, i tuoi dati personali dalla sezione Il mio account.

- I tuoi ordini
- I tuoi indirizzi
- Opzioni di pagamento
- Abbonamenti
- Cronologia di ricerca
- Alexa e Dispositivi Echo
- Kindle
- Fire TV
- Tablet Fire
- Amazon Drive
- App e altro
- Impostazioni musica (Amazon Music)
- Impostazioni video (Prime Video)
- Richiedi tutti i tuoi dati

For example, the user can download their search history but there's no possibility to download clickstream data.

Once the request is sent, the user will receive an email to prove their identity and confirm the Data Subject Access Request.
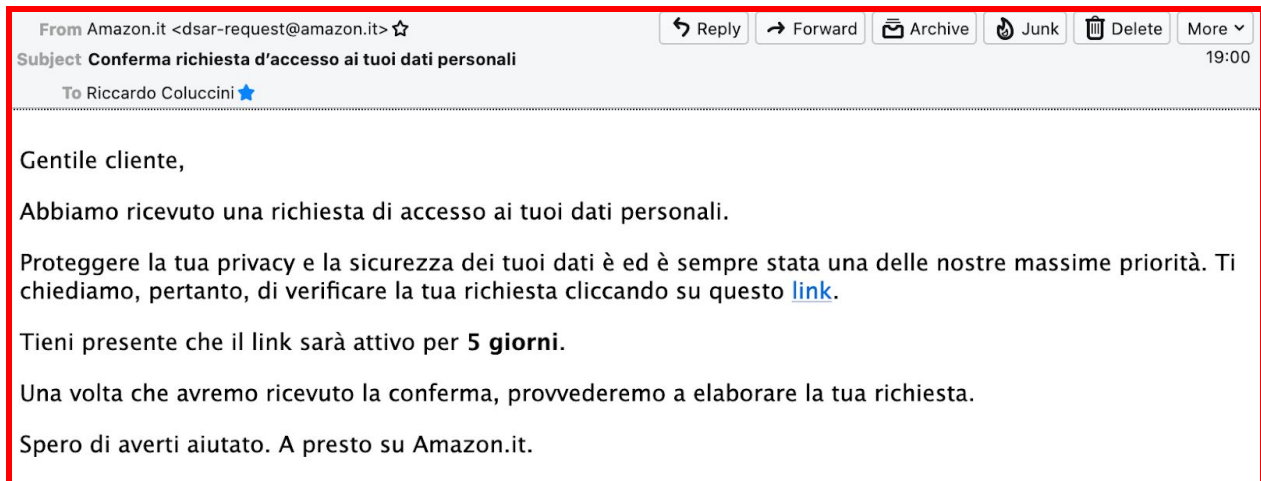
Creazione richiesta di accesso ai dati

ⓘ **Grazie. Ci siamo quasi...**
Proteggere la tua privacy e la sicurezza dei tuoi dati è ed è sempre stata una priorità assoluta per Amazon. Abbiamo inviato un link di conferma al tuo indirizzo e-mail, sul quale puoi cliccare per eseguire la verifica della tua richiesta. Tieni presente che il link scadrà tra 5 giorni. In caso di domande in merito a questa richiesta, contattaci.

Puoi accedere immediatamente, così come aggiornare, i tuoi dati personali dalla sezione Il mio account. Se hai una richiesta più specifica o ti occorre ulteriore assistenza, contattaci.

Maggiori informazioni su Come raccogliamo e utilizziamo i dati per fornire e migliorare i nostri servizi.

From Amazon.it <dsar-request@amazon.it> ☆   ↩ Reply   → Forward   🗄 Archive   🔥 Junk   🗑 Delete   More ⌄
Subject **Conferma richiesta d'accesso ai tuoi dati personali**   19:00
To Riccardo Coluccini ⭐

Gentile cliente,

Abbiamo ricevuto una richiesta di accesso ai tuoi dati personali.

Proteggere la tua privacy e la sicurezza dei tuoi dati è ed è sempre stata una delle nostre massime priorità. Ti chiediamo, pertanto, di verificare la tua richiesta cliccando su questo link.

Tieni presente che il link sarà attivo per **5 giorni**.

Una volta che avremo ricevuto la conferma, provvederemo a elaborare la tua richiesta.

Spero di averti aiutato. A presto su Amazon.it.

Conferma richiesta dati

✓ **La tua richiesta di accesso ai tuoi dati personali è stata ricevuta ed è in fase di elaborazione.**
La fornitura di tutti i tuoi dati può richiedere fino a un mese di calendario, a seconda dell'entità della richiesta. Per garantire la riservatezza dei tuoi dati, ti invieremo istruzioni su come accedervi quando saranno disponibili.

Puoi accedere immediatamente, così come aggiornare, i tuoi dati personali dalla sezione Il mio account. Se hai una richiesta più specifica o ti occorre ulteriore assistenza, contattaci.

Maggiori informazioni su Come raccogliamo e utilizziamo i dati per fornire e migliorare i nostri servizi.

Additional Links and references

Privacy related links (Amazon Europe, in Italian)
1. https://www.amazon.it/adprefs
2. https://www.amazon.it/gp/help/customer/display.html/ref=help_search_1-1?
3. https://www.amazon.it/b?ie=UTF8&node=14927981031
4. https://www.amazon.it/gp/help/customer/display.html?nodeId=201890250
5. https://www.amazon.it/gp/help/customer/display.html?nodeId=GDDFZHDDGWM46YS3
6. Previous privacy statement (22 March 2019)
   https://www.amazon.it/gp/help/customer/display.html?nodeId=GX2ET6PWCQD3TFP3
7. Current one (Updated on 12 September 2019)
   https://www.amazon.it/gp/help/customer/display.html?ie=UTF8&nodeId=200545460&ref_=footer_privacy

Notes:

1. https://www.reddit.com/r/privacy/comments/du7drb/amazon_told_me_they_cant_remove_the_order_history/
2. Amazon paper https://www.cs.umd.edu/~samir/498/Amazon-Recommendations.pdf
3. Amazon paper https://ieeecs-media.computer.org/assets/pdf/mic2017030012.pdf
4. https://boter.eu/2018/10/11/amazon-data-access-request-clickstream/
5. An article explaining how Amazon favorites its own products, accessible in the newspaper .pdf of 17 September: https://www.wsj.com/articles/amazon-changed-search-algorithm-in-ways-that-boost-its-own-products-11568645345
6. https://www.searchenginejournal.com/amazon-search-engine-ranking-algorithm-explained/265173/
7. https://www.amazon.com/gp/help/customer/display.html?nodeId=468496#GUID-1B2BDAD4-7ACF-4D7A-8608-CBA6EA897FD3__SECTION_87C837F9CCD84769B4AE2BEB14AF4F01