# **GDPR Banner Saliency**

Measuring the saliency of GDPR privacy policy banners across EU websites

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# What is GDPR?

And why do we care about it?

#### GDPR

- The **General Data Protection Regulation (GDPR)** is a set of laws in the European Union that govern how companies should process and handle personal user data.
- Put into effect on May 25, 2018.
- "With the GDPR, Europe is signaling its firm stance on data privacy and security at a time when more people are entrusting their personal data with cloud services and breaches are a daily occurrence."

## Why is this important?

#### Privacy as a right:

European Convention on Human Rights of 1950 states:

"Everyone has the right to respect for his private and family life, his home and his correspondence."

#### It's expensive to not comply:

"...the fines for violating the GDPR are very high. There are two tiers of penalties, which max out at €20 million or 4% of global revenue (whichever is higher), plus data subjects have the right to seek compensation for damages."

Cookies, the GDPR, and the ePrivacy Directive, 2019

The European convention on human rights. (1952)

#### C is for Cookies... and Consent.

- Cookies are small text files used by websites to track and store information about individual users. These can be potentially harmful if exploited, particularly without the user's consent.
- GDPR lays out a series of laws around how websites should inform visitors about how these cookies will be used and stored.

#### How it's implemented

A key feature of managing GDPR compliance is capturing user consent through "Cookie Banners" such as this one:

#### yahoo!

#### Your data. Your experience.

Yahoo is part of <u>Verizon Media</u>. We and <u>our partners</u> will store and/or access information on your device through the use of cookies and similar technologies, to display personalised ads and content, for ad and content measurement, audience insights and product development.

#### Your personal data that may be used

- · Information about your device and internet connection, including your IP address
- · Browsing and search activity while using Verizon Media websites and apps
- Precise location

Find out more about how we use your information in our Privacy Policy and Cookie Policy.

To enable Verizon Media and our partners to process your personal data select '**I agree**', or select '**Manage settings**' for more information and to manage your choices. You can change your choices at any time by visiting Your Privacy Controls.

l agree

Manage settings

**The Problem** 

#### How can a user consent if they don't see the cookie banner?

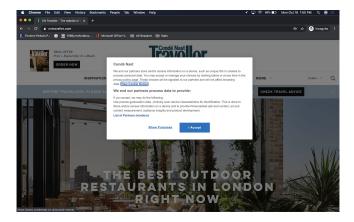
- If the cookie banner isn't salient enough, users may not have the opportunity to actively give their consent.
- This can become an expensive problem for the company.
- And a moral dilemma for all parties.

# Method

#### Data

#### Data used was 10 webpages

- Each Web page had to two images: Mobile and Desktop
- Websites were European based and part of the EU
- Websites were in English
- Websites were selected to represent different categories



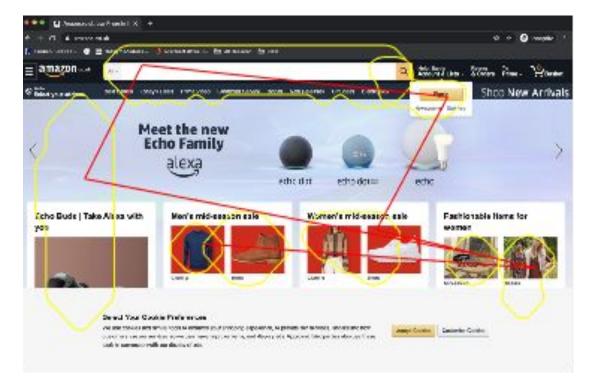
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	iners (vendors)

### Saliency Toolbox 2.3

- Analyze the image and provides the most salient part
  - Provides time estimate of most salient part (in milliseconds)
  - Provides saliency map of the image
- Also provides the second, third and so on, most salient part of the image.
  - This is provided like a road map overlayed on the image.

nage			
(no image selected)			New Image
atures		Parameters	Visualization
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#### Saliency Toolbox 2.3



#### Procedure

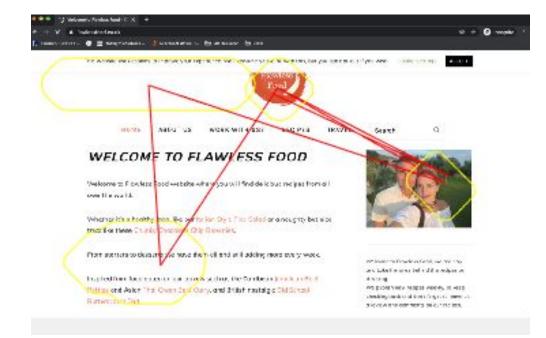
- 2 screenshots were obtained for each website
  - Mobile iPhone X
  - Desktop MacOS Catalina
- Each image was run through the Saliency Toolbox 2.3
  - Most salient part image overlay, saliency map and time were obtained

#### Assumptions

- If users see the Cookies Banner, they will accept or deny
- Image saliency alone is what determines the likelihood of interacting with the Cookies Banner
- Cookies Banner saliency is determined if the salient area includes part of the banner as long as the area contains text and/or a button

**Results** 

• A highly salient "Accept Cookies" banner in the mobile version of a website does not always translate to a highly salient statement in the desktop version



We'll assume you're ok with this, but you can apt-out if you wish. Cookie settings VVELCOME IO FLAWLESS FOOD

This website uses cookies to improve your experience.

Welcome to Flawless Food website where you will find delicious recipes from all over the world.

Whether it's a healthy meal like our Italian Style Rice Salad or a naughty but nice treat like these Chunky Chocolate Chip Brownies.

From starters to desserts we have them all and still adding more every week.

Inspired from food eaten on our travels such as the Carribean Jamaican Beef Pollies and Arian Thei Groop Poel Curre

### Saliency Classification

Rank	Category Definition
1st (best)	The websites that measured the "Accept Cookies" bar as the most salient on the first try
2nd	The websites that measured the "Accept Cookies" bar as the most salient on the second try
3rd (worst)	The websites that measured the "Accept Cookies" bar as the most salient on the third+ try

## **Saliency Classification**

Mobile Sites			Desktop Sites		
1 (Best)	2 (Acceptable)	3 (Worst)	1 (Best)	2 (Acceptable)	3 (Worst)
Best Companies (97ms)	Hubspot (174ms)	Amazon (486ms)	Conde Nast (99ms)	Chanel (168ms)	Best Companies (490ms)
Flawless Food (98ms)	Yahoo (177ms)	Chanel (509ms)	Yahoo (102ms)	Savills (172ms)	Emirates (620ms)
Conde Nast (100ms)		Emirates (4914ms)	Trinity College (106ms)	Hubspot (174ms)	Amazon (811ms)
Trinity College (102ms)		Savills (5000+ ms)			Flawless Food (4863 ms)

## **Saliency Classification**

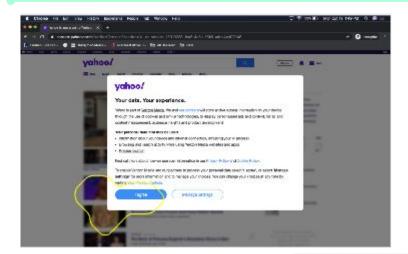
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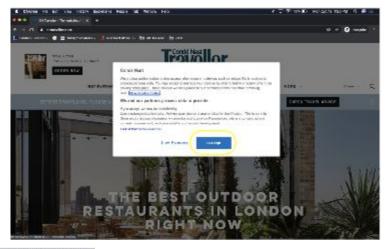
#### **Between Subjects ANOVA**

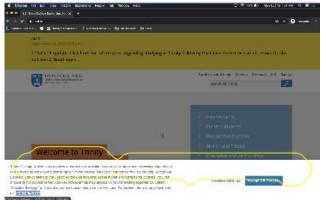
- Site Type (Mobile vs Desktop) by Category (1 vs 2 vs 3)
- DV: Time
- Mostly Interested in site type by category interaction (not main effects)
  - Is mobile or desktop faster for any of the three categories?
- No interaction, F(2,14) = .23, p = .797,  $\eta_p^2 = .032$



#### If you really care about being GDPR compliant:

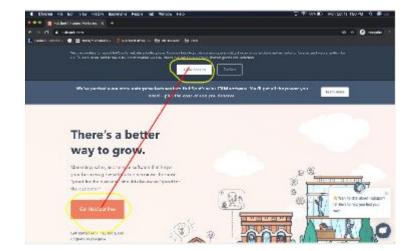


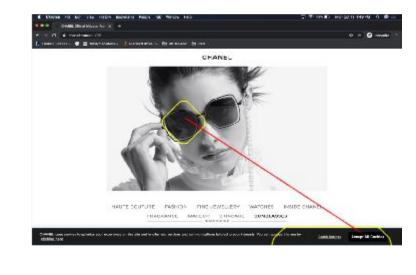




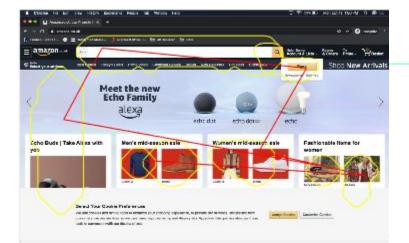
# If you care about being GDPR compliant, but it's not your number one priority:

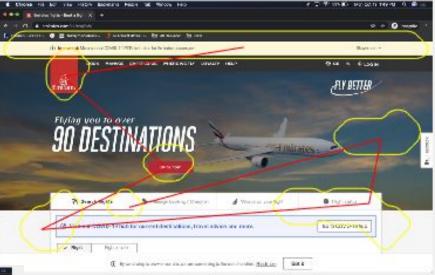


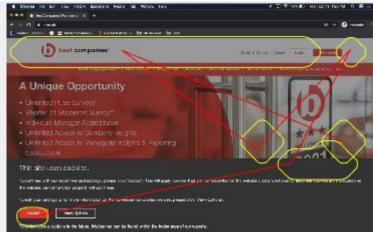




### If you don't care about GDPR compliance at all:







### **Limitations of study**

- Only measured saliency:
  - Does not take into account other user/banner behaviors
  - Does not take into account user intent
- Would benefit from measuring eye tracking and mouse heatmap.
- GDPR laws are very intricate; there are ways that companies bypass having users explicitly consent through legalese and calculated risks that we did not take into account for our analysis.

## Thank You!

#### References

- Cookies, the GDPR, and the EPrivacy Directive." GDPR.eu, 9 May 2019, gdpr.eu/cookies/.
- The European convention on human rights. (1952). Strasbourg: Directorate of Information.
- Walther, D. & Koch, C. (2006). Modeling attention to salient proto-objects. *Neural Networks, 19*, 1395–1407