PhD proposition: Measuring and preventing the impact of harmful online ads on children and teenagers
LIG (within the MIAI 3IA institute)

Keywords: online targeted advertising, Instagram, Youtube, browser extension, data collection and analysis, machine learning, statistics, children, teenagers, unhealthy food
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Project Description:
Children and teenagers live in an incredibly digitalize world. Technology and the Internet facilitates children's right to access information, to learn and to lead a social life. However these benefits and opportunities must be balanced with mechanisms to protect their rights to be free from economic exploitation and to have their privacy respected.

Despite the importance of protecting these vulnerable segments of our population, little is known about what data advertising platforms are collecting about children and teenagers, and how advertisers are using this data to target them with ads. In a recent report WHO emphasizes that "childhood obesity and marketing of unhealthy products are among the main concerns" and that "digital marketing of these products is a new, global public health challenge that needs to be urgently tackled"[5].

The goal of the PhD thesis is to analyze the ads children and teenagers receive, assess their impact through controlled experiments, and propose transparency mechanisms that are able to surface harmful online ads and reduce their impact. The student will approach the work in 4 steps:

1. *Tool development:* Instagram and YouTube are the two platforms most used by children and teenagers. The student will need to build a tool similar to AdAnalyst (adanalyst.mpi-sws.org) that collects the ads users see in their Instagram feeds and when they watch Youtube videos. The student will be able to get advice and help from the PhD students that are currently developing AdAnalyst for their research.
2. *Analysis of data:* The student will first use data mining and natural language techniques to identify harmful online ads (e.g., ads that promote unhealthy foods). The student will thereafter analyze: (1) What is the extent and nature of children's exposure to ads for unhealthy foods/drinks?; (2) What is the extent and nature of children's engagement with food/drink advertising? (3) How do food and beverage marketers target/reach children with advertising in digital media?
3. *Controlled experiments:* We will promote the tool in high schools and we will target volunteers with well crafted ads to assess the impact that various ads have on teenagers.
4. *Design of transparency mechanisms:* The end goal of the thesis will be to design mechanisms to increase the transparency in online advertising and allow children/teenagers and regulators to detect harmful practices.

The student will be able to work with more than 200k real-world ads received by more than 1000 users we collected using our browser extension AdAnalyst (www.adanalyst.mpi-sws.org). Throughout the project the student will be able to familiarize himself with the online targeted advertising ecosystems, and apply machine learning techniques on real world data.

Requirements:
Candidates should hold (or be about to get) a MSc degree in computer science and have:
- Strong coding skills**.** Experience with coding in mobile platforms is a plus.
- Experience in working with data.
- Strong motivation.
- Interest in the societal impact of advertising platforms.

Application instructions:
The position will be open until filled, interested candidates are invited to send their application as soon as possible. The start of the PhD is expected in Fall 2019. Interested candidates are invited to send the following documents:
- a detailed CV,
- a list of courses and grades during the MSc (and if possible earlier years),
- a list of 2-3 references willing to support their application,
- a short statement of interest and any other information useful to evaluate the application.

Additional information:
The PhD student will be a member of the new MIAI institute (one of the four interdisciplinary institute on artificial intelligence in France created by the government in June 2019), as part of the "Explainable and Responsible AI" chair. As such, he/she will benefit from a lively research environment as well as a broad training offer on all aspects of AI. The PhD student will be a UGA student. He/she will be register at the MSTII doctoral school of Univ. Grenoble Alpes and be a member of the LIG Lab.
Interested candidates are encourage to contact directly the advisor if they have any question about the position.

References:

[1] Auditing Offline Data Brokers via Facebook's Advertising Platform
G. Venkatadri, P. Sapiezyn´ski, E. Redmiles, A. Mislove, O. Goga, M. Mazurek, and K. Gummadi
The Web Conference (WWW), May 2019
[2] Measuring the Facebook Advertising Ecosystem
A. Andreou, M. Silva, F. Benevenuto, O. Goga, P. Loiseau, A. Mislove
The Network and Distributed System Security Symposium (NDSS), February 2019
[3] On Microtargeting Socially Divisive Ads: A Case Study of Russia-Linked Ad Campaigns on Facebook
F. Ribeiro, K. Saha, M. Babaei, L. Henrique, J. Messias , O. Goga, F. Benevenuto, K. P. Gummadi, E. M. Redmiles
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[4] Investigating Ad Transparency Mechanisms in Social Media: A Case Study of Facebook's Explanations A. Andreou, G. Venkatadri, O. Goga, K. Gummadi, P. Loiseau, A. Mislove
The Network and Distributed System Security Symposium (NDSS), February 2018
[5] Monitoring and restricting digital marketing of unhealthy products to children and adolescents
WHO European Office for the Prevention and Control of Noncommunicable Diseases (NCD Office)
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