Envirofy: a real time tool to support eco-friendly food purchases online

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A third of global greenhouse gas (GHG) emissions are attributable to the food sector, however dietary change could reduce this by 49%. Many people intend to make eco-friendly food choices, but fail to do so at the point of purchase. Educating consumers on the environmental impact of their choices during their shop may be a powerful approach to tackling climate change. This paper presents Envirofy: the first eco-friendly e-commerce grocery tool for real shoppers. We share the current state of Envirofy and discuss how the HCI community can help to develop and evaluate real time tools to close intention-behaviour gaps and ultimately reduce GHG emissions.

CCS Concepts: • **Human-centered computing** → **Collaborative and social computing devices**.

Additional Key Words and Phrases: Sustainable Food-HCI; digital behaviour intervention;

1 INTRODUCTION

The number one thing individuals can do to substantially lower greenhouse gas (GHG) emissions is to change their diet [2] yet the consumption of sustainable food remains low [3]. If we continue to consume food (and drive production) in the same way we do now, the food sector could be responsible for up to 50% of all global emissions by 2050 [6].

Interestingly, many people do intend to buy environmentally friendly food [7]. However, when it comes to the point of purchase, their behaviour often does not align with these intentions which is known as the "intention behaviour gap" [8].

In this paper, we outline Envirofy, the first real-time web-based tool targeting sustainable food shopping behaviour. Envirofy uses both behaviour change theory (the Behaviour Change Wheel, BCW) [1] and multidisciplinary evidence during the point of purchase, during online shopping.

2 INTERFACE COMPONENTS

In this section we describe the main components of Envirofy.

Carbon labelling and traffic light colour coding. Four traffic light colour coded labels are displayed under each product - globe (Total Environmental Impact (TEI)), factory (Food Production), vehicle (Transport), and recycling (Packaging) - allowing for high level information at a single glance. The display of these four pieces of information encourage consumers to actively compare the environmental performance of products.

Ordering products by environmental impact The TEI of a food item determines the display order on the current web page. Items with small TEIs are presented at the top of the page (green globes), and items with increasingly higher impacts are lower on the page (orange or red globes). Items with inconclusive TEIs (grey globes) are appended to the end of the page, penalising the lack of environmental information.

Running total and presentation of carbon foot print information Real time feedback on the overall impact of the items currently in the user's basket are displayed. This includes the CO_2 value and the number of trees that would need to be planted to offset the current shop.

3 DISCUSSION

This paper presents the first real-world tool that helps online grocery shoppers to reduce their dietary carbon footprint by presenting behavioural intervention techniques at the point of purchase.

Envirofy delivers intervention techniques, in real time, within the context purchase barriers operate (i.e. the intention-behaviour gap that occurs when shopping). Envirofy is also uniquely suited to a real world evaluation in this context, to assess whether it actually changes shoppers' purchases and associated CO_2 values (i.e. closes the intention-behaviour gap).

Envirofy supports individual-level behavioural changes, while providing the user with the freedom of choice. Future research will examine the feasibility of embedding Behaviour Change Techniques (BCTs) within Envirofy, such as: 1) goal setting [4], by contextualising CO_2 values with a target CO_2 per person, and 2) reducing exposure to the cues for behaviours, by making images of high carbon foods less appealing, i.e. altering background, saturation and contrast of images [5]. This workshop will be a great opportunity for discussion of Envirofy, its BCTs, and its exploration of food visualisation towards reducing carbon emissions.

4 CONCLUSION

To alter the substantial impact of our food choices on the planet, individuals are required to purchase more environmentally friendly food. Envirofy helps to address this requirement by presenting theory- and evidence-based behavioural intervention techniques, at the point of purchase, when online shopping. HCI researchers have an important role in designing, developing and evaluating novel behavioural interventions that target sustainable food choices, intention-behaviour gaps in other domains, and ultimately in reducing GHG emissions.

REFERENCES

[1] Susan Michie, Maartje M Van Stralen, and Robert West. 2011. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. Implementation science 6, 1 (2011), 42.

[2] J. Poore and T. Nemecek. 2018. Reducing food's environmental impacts through producers and consumers. 360, 6392 (2018), 987–992. https://doi.org/10.1126/science.aaq0216

[3] Sandra Rousseau and Liesbet Vranken. 2013. Green market expansion by reducing information asymmetries: Evidence for labeled organic food products. Food Policy 40 (2013), 31 – 43. https://doi.org/10.1016/j.foodpol.2013.01.006

[4] Mical Kay Shilts, Marcel Horowitz, and Marilyn S. Townsend. 2004. Goal Setting as a Strategy for Dietary and Physical Activity Behavior Change: A Review of the Literature. American Journal of Health Promotion 19, 2 (2004), 81–93. https://doi.org/10.4278/0890-1171-19.2.81 arXiv:https://doi.org/10.4278/0890-1171-19.2.81 PMID: 15559708.

[5] Charles Spence. 2018. Background colour its impact on food perception behaviour. Food Quality and Preference 68 (2018), 156–166. https://doi.org/10.1016/j.foodqual.2018.02.012

[6] Marco Springmann, H. Charles J. Godfray, Mike Rayner, and Peter Scarborough. 2016. Analysis and valuation of the health and climate change cobenefits of dietary change. 113, 15 (2016), 4146–4151. https://doi.org/10.1073/pnas.1523119113

[7] Iris Vermeir and Wim Verbeke. 2006. Sustainable food consumption: Exploring the consumer "attitude–behavioral intention" gap. Journal of Agricultural and Environmental ethics 19, 2 (2006), 169–194.

[8] Iris Vermeir and Wim Verbeke. 2008. Sustainable food consumption among young adults in Belgium: Theory of planned behaviour and the role of confidence and values. Ecological Economics 64, 3 (2008), 542 – 553. https://doi.org/10.1016/j.ecolecon.2007.03.007