Proposal for Personalizing Carbon Emissions Data for Future Carbon Neutrality

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Climate change is now personal. The news around it was on industries' effects and countries' actions on climate change. Now, more and more people talk about their effect on the climate and how to make an impact. Almost two-thirds of people around the world now consider climate change a global emergency (McGrath, 2021). 80% are willing to make a change in their lifestyle to reduce their effect (Clifford, 2021). This creates a big opportunity to offer a solution at the personal level. There is so much data available about carbon emissions, but little information on people's carbon footprint – daily, personalized, and measured. People would benefit from this individual information to change their behavior and compensate for their carbon emissions.

1 People Need Methods to Offset Their Carbon Emissions

The challenge is that businesses can opt to offset carbon emissions by buying carbon credits or by implementing carbon capture and sequestration (CCS) techniques. People at the individual, domestic level don't have these options. This analytics project will solve that problem. The project will use Apple's customers' data to help users measure their own carbon footprint. This, in return, will provide guidance to act. The contribution of this project can also address Apple's goal of carbon neutrality by 2030. Apple's current carbon footprint is 22.6 million metric tons of carbon dioxide equivalent (CO2e). 19% of it comes from product use (Environmental Progress Report, n.d.). Having a clearer understanding of today's carbon footprint at the personal level will let Apple establish approaches that decrease such footprint and achieve its goal by 2030.

2 The Environment Can Benefit from Personalized Data

To address the problem this team proposes a built-in algorithm in the Settings section. It will allow Apple's users to track their daily activities and estimate the equivalent number of harmful emissions produced. The user will need to complete an initial configuration by providing some specific details (i.e., car model). Data is already available for most users and is captured through all Apple's devices in the users' accounts. All internet-of-things (IoT) devices paired to the user's *Home* account will also provide data (like thermostats). The IoT data will be integrated into the same database for better data manipulation.

With data insights, we calculate a global index considering users' daily activities. It will project an equivalent amount of CO2 emissions based on the initial configuration. We calibrate these calculations by comparing them to the datasets of CO2e emissions by activity (US EPA, 2021). This comprehensive dataset and information will give users the knowledge of their carbon footprint so that they can act. They will also have amount suggestions to donate based on their total emissions produced. Donations can be made to different environmental partner projects, which will be listed after the carbon footprint is revealed.

3 Minimal Costs for a Great Impact

The cost for this project will be the hourly rates for the analytics team – four analysts and one software developer with an hourly payment of $20. The team will work 25 hours per week for five consecutive weeks (total of $12.5K). Each will use their personal computer and software. Apple and Kaggle will provide all necessary datasets at no cost. No ROI will be calculated as this project focuses on qualitative outcomes rather than financial benefits. Instead, Apple's Product Use CO2e will be measured by the end of each year of usage.

4 Frequent Comparisons to Assess the Algorithm's Efficiency

The short-term evaluations for this project will be based on people's actions. Each user will receive a month-by-month comparison of their behavior and emissions. This will show the impact of their daily, small actions to offset their carbon footprint. Long-term evaluations will show both users' decrease in carbon footprint, and Apple's Product Use CO2e. Each quarter will be compared to the previous one. There will also be an assessment using all consumers' data by the end of each year to track Apple's total Product Use CO2e.

5 Conclusion

As soon as the approvals for this project are cleared, the analytics team will launch invitations for the sprint review meetings to track the progress of each stage. These will be organized on a weekly basis to share the findings. The team will also perform peer-reviews with the development team to set the goals for the upcoming sprint. Let's unite our efforts for a more carbon-free environment.

6 References

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