
Eco Footprint - Understanding my impact

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Author Keywords

Authors' choice; of terms; separated; by semicolons; include commas, within terms only; required.

Introduction

Nowadays, the environment is one of the most talked topics in the entire world. Sea levels are rising, there's tons of plastic in the ocean, the world is getting warmer, levels of CO2 emissions are increasing every day, among many other problems that ultimately lead to a degrading state of the world. Today's society still ignores these problems that won't be paid in their generation, and green habits are only respected by unrepresented small groups of people that try to keep the longevity of this planet. We believe people can do better without radical changes in their lives, if they make the small effort of paying attention to some of their behaviours and actions that are done in a daily basis. If people could, for instance, figure out the amount of water wasted during their morning shower, their usage of unnecessary lightning, or even the food that is wasted and put on the trash, people would be more aware of how their ecological behaviour and change it for better. Our ultimate goal is to make use of technology to bring people to the attention that they can do better, not only to the environment but also to their wallets.

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Proposed solution

Approach

It's all about the garbage can

To calculate (and, consequently, improve) the ecological footprint of a user, many objects or activities could be tracked. Water, electricity, gas, natural gas, driving, waste, just to name a few. For our project, our group decided to focus on the garbage that is produced in households. We believe that the waste that we produce is one crucial point of world destabilisation; starting with the plastic that we consume leads up in the oceans, the food we waste that could be feeding someone who has less economic resources, the general rubbish that ends up in polluted landfills - all of this starts in our garbage can.

A case study: the ambient orb

A great and useful design is strictly necessary in a project that aims to change users' behaviour - in our case, to reduce their ecological footprint.

The ambient orb is...

Self-awareness

Given how easy it is for the user to understand the ambient orb, our solution is based on the ambient orb. A simple LED colored light, placed in a strategic position (such as the kitchen) is more than enough for a person to understand how good or bad is their ecological footprint. The light would be accordingly adjusted: red if a user is doing little for the environment (in our case, if the amount of garbage produced is above the average), green if the user is fully committed (if the amount of waste is below average), or yellow (if it's somewhere in between). This would lead to

Peer pressure

This idea, however, generates an incon

Materials

In order to put in practice and assemble our idea, we aim in the first place to build a functional physical prototype, using the Arduino board. The following materials will be required:

- **Garbage can (3 to 4 units)** - each garbage can has built-in sensors that determine the amount of volume present; these values are then sent through Wi-Fi
 - 2x AA batteries
 - 1x Battery holder case
 - 1x HC - SR04 Ultrasonic Distance Sensor
 - 1x Jumper Wires
 - 1x Arduino Board
 - 1x Feather HUZZAH w/ ESP8266 WiFi
 - 1x Plastic 50l garbage can
 - 1x Coloured garbage can cover (grey for common trash; green for glass; yellow for plastic and metal; blue for paper and card)
- **Light bulb (indoor use)** - the light bulb acts as an 'ambient orb', and it is placed in a convenient place to the user to grant self-awareness
 - 1x Xiaomi Mi LED Smart Bulb Yeelight Wi-Fi
 - 1x Small lamp - IKEA's Fado
- **Portable LED (outdoor use)** - when not in home, users can track their eco footprint on the go with a portable LED that can be attached to a keychain or the back of a smartphone
 - 1x Adafruit Mini Skinny NeoPixel Digital RGB LED Strip - 60 LED/m (1m)
 - 1x Lithium Ion Polymer Battery - 3.7v 150mAh

Name	First	Test Conditions	
		Second	Final
Marsden	223.0	44	432,321
Nass	22.2	16	234,333
Borriello	22.9	11	93,123
Karat	34.9	2200	103,322

Tabela 1: Table captions should be placed below the table. We recommend table lines be 1 point, 25% black. Minimize use of table grid lines.

- 1x Adafruit nRF52840 Feather or equivalent
- 1x Breadboard-friendly SPDT Slide Switch
- 1x JST-PH Battery Extension Cable - 500mm

On the other side, we also want to build a simple prototype application that should not only allow the interaction between the user and the system, but also to give the user an in-depth analysis of their ecological footprint, so they can act upon their behaviours. Thus, for the software part, only a computer and a smartphone running Android or iOS are necessary.

Introduction

Write in a straightforward style. Use simple sentence structure. Try to avoid long sentences and complex sentence structures. Use semicolons carefully.

- Use common and basic vocabulary (e.g., use the word “unusual” rather than the word “arcane”).
- Briefly define or explain all technical terms. The terminology common to your practice/discipline may be different in other design practices/disciplines.
- Spell out all acronyms the first time they are used in your text. For example, “World Wide Web (WWW)”.

- Explain local references (e.g., not everyone knows all city names in a particular country).
- Explain “insider” comments. Ensure that your whole audience understands any reference whose meaning you do not describe (e.g., do not assume that everyone has used a Macintosh or a particular application).
- Explain colloquial language and puns. Understanding phrases like “red herring” requires a cultural knowledge of English. Humor and irony are difficult to translate.
- Use unambiguous forms for culturally localized concepts, such as times, dates, currencies, and numbers (e.g., “1-5- 97” or “5/1/97” may mean 5 January or 1 May, and “seven o’clock” may mean 7:00 am or 19:00). For currencies, indicate equivalences: “Participants were paid ₩ 25,000, or roughly US \$22.”
- Be careful with the use of gender-specific pronouns (he, she) and other gender-specific words (chairman, manpower, man-months). Use inclusive language (e.g., she or he, they, chair, staff, staff-hours, person-years) that is gender-neutral. If necessary, you may be able to use “he” and “she” in alternating sentences, so that the two genders occur equally often [?].
- If possible, use the full (extended) alphabetic character set for names of persons, institutions, and places (e.g., Grønbæk, Lafrenière, Sánchez, Nguyễn, Universität, Weißenbach, Züllighoven, Århus, etc.). These characters are already included in most versions and variants of Times, Helvetica, and Arial fonts.

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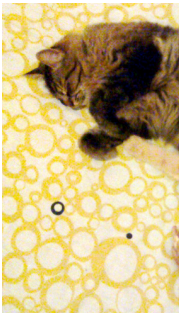


Figura 1: In this image, the kitten is tessellated within a frame. Images should have captions and be within the boundaries of the slide page ?? . Photo: © Flickr.

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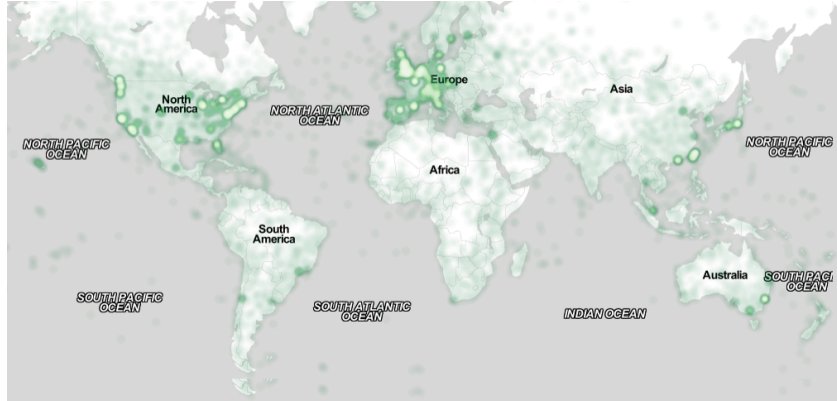




Figura 2: In this image, the map maximizes use of space. You can make figures as wide as you need, up to a maximum of the full width of both columns. Note that \LaTeX tends to render large figures on a dedicated page. Image:   ayman on Flickr.

	First	Location
Child	22.5	Melbourne
Adult	22.0	Bogotá
Gene	22.0	Palo Alto
John	34.5	Minneapolis

Tabela 2: A simple narrow table in the left margin space.

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