Case Study Assignment #3: Human-Computer Interaction

Universal Principles of Design & Dark Designs/Digital Addiction

Due on D2L March 11th, 2022 by 11:59 p.m.

14% of Total Grade

The first half of this assignment is all about applying the **Universal Principles of Design** you have learned thus far to your favorite computational systems. The second half asks you to consider **Dark Design Patterns** that you've seen in software.

Directions:

- Complete both problems in a single Word (or Google, Overleaf, or whatever you choose) document, including screenshots/pictures as you see fit.
- **Problem #1 (55% of grade):** The purpose of this first problem is to reflect on all of the Universal Principles of Design (UPD) we've discussed thus far (listed below) by drawing connections to one or more digital products. A digital product is any computer-based thing you interact with- perhaps it's an app, a video game, software program, a vehicle display interface, an electronic device you interact with at home, like a SmartTV or an electronic keyboard, etc. Could the product or products benefit from the following Universal Principles of Design? In other words, is there a way the piece of technology could be improved by applying one or several of these Universal Principles of Design? There are lots of ways this can be organized and formatted, but here are the minimum expectations:
    1. You come up with a set of products to analyze. The set could be just 1 product or it could be up to 8 different products, but know that your set of products must be built so that you can confidently meet expectation #2 below.
        - **For each product selected, provide a brief description of what the product is and how it is often used.**
    2. Each of the 8 components of the Universal Principles of Design is connected to at least one product. To use the language of mathematics, you are making a surjective mapping from the set of UPD components onto your set of products. For example, you could connect all 8 UPD components to just 1 product, although it may be difficult to find a single product that has relevant connections to all 8 UPD components. Conversely, you could do a 1-1 mapping from the 8 UPD components onto 8 products, but that'd take extra work introducing 8 different products. What will probably be most common is that you have, say, three products, X, Y, and Z, and X allows relevant connections to UPD components 1, 3, 8; Y connects to 2, 4, 6; and Z connects to 5 & 8. The point is that all 8 UPD components are covered by some number of products.
        - **For each UPD component:**
            1. **Briefly describe what the UPD component means**
            2. **Briefly describe the aspect of the product that you think violates the UPD component**
            3. **Explain how you'd improve the interaction between the user and product by applying the UPD component to a proposed redesign**
            4. **Include pictures and/or screenshots as you see fit (although this is not required)**
    3. With so many connections going on here this could get messy easily. Make sure that your document is well organized and clearly formatted, using bold headers and/or lists as necessary, so that a reader can easily follow the structure. The 8 UPD components to be covered are shown below:

The 8 Universal Principles of Design for Assignment #3

1. Aesthetic-Usability Effect
2. Accelerators
3. Affordance
4. Anthropomorphism
5. Chunking

6. Color Psychology
7. Common Fate
8. Consistency

See rubric on last page for specific point breakdowns.

- **Problem #2 (45% of grade):** In the second problem, you will analyze a piece of software (an application, a website, a video game, etc.) that you believe uses dark designs to intentionally promote addiction to that software. You are welcome to choose an existing product, such as Instagram or Call of Duty, or feel free to "invent" your own product and be a dark designer yourself. Once you have a software in mind, complete the following two parts:

    1. **Part A:** Describe the software and analyze it in terms of Nir Eyal's Hooked Cycle. Here you should:
        - Briefly describe what the software is, its target audience, and how it is commonly used
        - Briefly describe the primary business model of the software. In other words, how does the company make money off the software? Answers here could look like: being paid by advertisers to show ads to users, being paid by users monthly through subscriptions, being paid by users through microtransactions/in-app purchases, taking a percentage of a transaction that occurs between two users on the app or website, etc. Lastly, evaluate how this business model incentivizes users being addicted.
        - Think of an example interaction on the software and connect the interaction to each stage of the Hooked Cycle:
            1. **What internal trigger(s) does the software cater to?**
            2. **What external trigger(s) does the software provide? How does this external trigger(s) lead to action?**
            3. **What action does the software allow the user to take in response to those triggers?**
            4. **What reward(s) does the software make the user anticipate? How does that reward fulfill their internal trigger?**
            5. **How does the software then create user investment, ultimately "hooking" the user?**

    2. **Part B:** Imagine you work for the company that makes the software you described above. Your job is to objectively measure if a user is addicted to the software or not. However, the software is used by millions of people, so it is not possible for the company to employ people to directly observe users. Luckily for you, the users have consented, knowingly or unknowingly, in the "Terms and Agreements" to allow you to see all their interactions with the software, as well as their facial expressions through the phone camera/web cam (which doesn't actually happen… I hope). Propose, at a very high level, an algorithm that can run in the background, collect and analyze user data, and return a T/F boolean for if the user is addicted or not. In your proposal:
        - **What specific variables would your algorithm collect?**
        - **Why do you believe those variables are indicators of addiction?**
        - **Write a bulleted procedure (or pseudocode if you'd rather) of how the algorithm would run.**
        - **Assuming the variables you selected are true indicators of addiction, why is this guaranteed to be an objective determination?**

Comment on the Length:

- I know this assignment may be intimidating as it has a lot of pieces! Do make sure you cover the requirements for each piece as that is what you're grading against, but don't feel like you need to be overly verbose. For example, I think each UPD component/the product descriptions can be covered in a paragraph each.

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Universal Principles of Design (UPD) & Dark Designs Rubric

Category	Define: 1 Points	Describe: 3 Points	Explain: 5 Points
Problem 1: UPD Component x Connections ($\forall$ x $\in$ UPD)	You can define what UPD component x means in your own words.	You can describe an aspect of a product that could be improved by UPD component x.	You can explain how to improve the interaction between the user and the product by applying UPD component x.
Problem 1: *Description of Product[s]*	You can name 1 or more products to connect to the UPD components.	For each product presented, you can briefly describe what the product is.	For each product presented, you also give a couple use cases of the product.
Problem 1: *Organization and Clarity*	Overall, Problem 1 is disorganized and hard to follow.	Problem 1 is organized under some structure but still requires close inspection to find where any given UPD connection is made.	Problem 1 is highly organized, making it clear where products are introduced and UPD connections are made just by the formatting alone.

Category	Present: 5 Points	Describe: 10 Points	Apply: 15 Points	Comprehensively: 20 Points
Problem 2A: Connecting a Product to the Hooked Cycle	You can introduce a piece of software suspected of having a dark design, its intended audience, and how it is commonly used.	You can briefly describe the business model of the product and draw a connection to why it is beneficial to the company to have users be addicted.	You propose an example interaction between the user and software but only draw connections to some of the 5 steps of the Hooked Cycle.	You can connect your entire example interaction to the 5 steps of the Hooked Cycle seamlessly.
Problem 2B: Observing User Addiction	You can introduce the specific variables (data) your algorithm would monitor to infer addiction.	You can describe why you believe those variables would be evidence of addiction.	You can propose an algorithm (set of steps) that would decide if a user was addicted.	You can discuss why an algorithm guarantees objective results.