University of York

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DEPARTMENT OF COMPUTER SCIENCE

HUMAN-COMPUTER INTERACTION 2 (HCI2)

Open Individual Assessment

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Question 1

A. The data that Fitbit users generate are shown in simple dashboard formats that are easy for users to visually process. This will enable a user to evaluate what they have done, feel a sense of accomplishment from their improvements and be motivated to set further future goals.

   The memory process of timing how long one carries out a certain fitness activity is taken on by the stopwatch function - an external representation. This is useful to users, as it is difficult to time in one's head during exercise due to strenuous activity causing physical strain, affecting an exerciser's ability to count time properly or think.

   Another process is the perceptual process of the user being notified of goals, calendar reminders, texts, alarms or incoming calls. This is aided by notification sounds and by displaying messages in the periphery of the screen, redirecting attention through both auditory and visual perceptions respectively.

B. a) The notification functionality of the Fitbit as it has been defined thus far doesn't take into account how the user will detect important notifications when in noisy surroundings (i.e. cannot hear notification sounds) and they aren't looking at their smartwatch (e.g. when walking in busy districts).

   Another thing of note is that the user may be overwhelmed by being always connected to the digital world (can't put smartwatches away in pockets like phones). Too many notifications coming onto the screen and the device making sound in all settings, even when it may be inappropriate (e.g. in meetings) could cause dissatisfaction.
   b) To avoid a user being distracted by too many notifications, the Fitbit may have an option to turn off all notifications. However, a flexible approach could be to give the user rein to toggle with the notifications to suit their own needs e.g. turn off all notifications but calendar reminders for a dubbed 'Meeting Notifications Mode', allowing a user to focus. Modes could also last for specific durations in case the user forgets to turn them back on. The device could even have different intensities of haptic feedback or volume for specific notification categories. In order to make the device accessible to those with specific noise sensitivities, varying notification sounds could be chosen from.

   Nevertheless, customisable features come at the cost of a Fitbit simplicity. So giving a user too many options to choose their preferences may not be favourable. Perhaps it could be limited to just default notification modes.

Question 2

A. One proposal could use virtual reality headsets to display broad, vivid, panoramic landscapes throughout various ages. A narrator would zoom in and explain to you in further detail of an area of the scene your gaze fixates on, seamlessly limiting the need for any interaction. It would be highly personal, according to a user's desires, and immersive, far removed from anything or anyone you'd know from the modern world.

   A socialistic alternative could be one that makes use of blended spaces. Climate, fauna and aweinspiring creatures are emulated in an atmospheric, dimmed arena. Museumgoers follow a thematic trail through different eras gathering glowing tangible relics of the past hidden behind prowling holographic beasts, which vanish when objects are added to bags provided. This prompts their camouflaged device narrator to whisper them congratulations, a related fact and tips. At checkpoints, they have to answer questions about the facts gathered to escape.

B. The goal is reached as a result of coordination between the embodied agents (i.e. people, objects). Knowledge lies not only in an individual, but also said individual's social and physical environment in the form of tangible artifacts embodying facts, and their team members. Atmosphere created by technologies appealing to different senses: bright eyecatching holograms, relics (e.g. bones, teeth, branches, egg), bags identifying artifacts via NFC, device narrator, quizzing speech recognising checkpoints. The group relies upon each person's unique strengths; some participants may be better at memory recall, others at finding the objects that the device narrator tells them to.

C. A method to evaluate the interactive experience is to carry out qualitative research by analysing participants' responses in surveys. However, this could be limited and not all participants (e.g kids due to the family demographic) could give responses that would be helpful. 'Quick and dirty' observation may not reveal all problems. Comparatively, we could have field studies in which we observe users. It is better for an observer to be an invisible total outsider (compared to one who participates as could be intrusive). Videoing the participants interacting with the technology would show us any usability flaws in practice, but this would require consent and could induce selfconsciousness, with the aim to be immersive perhaps being slightly compromised. Cameras could cause for jarring transitions between past and modern, but these could be camoflaged to protect the immersion. Analysis would be timeconsuming, but could be summarised and would thoroughly capture important information.

Question 3

A. Duolingo is a language learning platform. It has bite sized lessons that are supposedly effective and easy for users to stick with. Over thirty courses are available to the public in English, three of which are constructed languages, two being fictional languages. Other courses are available for other language speakers.
B. In Mekler, E.D, and Kasper Hornbæk. K.'s 2019 paper titles A Framework for the Experience of Meaning in Human-Computer Interaction, the "key idea of a framework is that the experience of meaning consists of five distinct, albeit related components – connectedness, purpose, coherence, resonance, and significance."

   The first component, connectedness, embodies the fact that I was learning a language to linguistically understand different angles on the world I am in. My purpose was to become able to read stories in other languages, as I know that different languages have different nuances in storytelling and am very intrigued by that. Duolingo helped my coherence of languages by gradually building me up from basic vocabulary to more advanced. I felt like I had resonated with a language once I had understood a saying or phrase unique to that language, and found in no other, or understood something I would not have before outside of my interactions with the app. Evaluating my incremental progress on Duolingo over a few days, as well as thinking about what questions I had answered correctly or incorrectly during the test sections, made me feel I had done something of significance by maintaining my streak of daily lessons.
C. I like how the framework allows me to express my eudemonic ambitions I wanted to reach by using the app and that meaning encompasses past and present and future, however I feel that the framework limits to capture the socialistic aspect of my experience of the app, as meaning is not always subjective. For example, the community based nature of the app, allowed me to add and compete with friends was an important part of my user experience. I could also access Q&A forums to comment about specific translations.

   It also doesn't address the aesthetic aspect of user experience, as in how I intuitively connected with the simple art and minimalistic design of the app, as it didn't overwhelm me as many other apps tend to. I also found the mascot of the app's encouragements very uplifting and evocative. It doesn't address the hedonic aspect of the challenge the game's test provides either.

   Also, the framework doesn't address the other motivational measures the app had inplace, such as streak freezes which could be bought with

gem rewards in order to maintain my streak even on particularly unproductive days on the app.

Question 4

Surging in popularity in the summer of 2016, Pokémon GO is an augmented reality mobile application playing upon older users' nostalgia for the Pokémon franchise, while also attracting younger audiences for its novel creativity[0]. According to GPS, users find digital creatures - Pokémon - in settings emulating users' surroundings, subsequently battling, catching and training them to evolve. Winning numerous awards and appraisals for upending the traditional gaming world through outside excursions, evidence its huge cultural impact. Business, national parks, places of worship and museums near PokéStops reported an influx of visitors[1].

Conversely, players have lacked appropriateness: from trespassing into private properties to playing at sites of solemnness, such as graveyards and memorials[2]. Drivers distracted by the game resulted in tragic incidents[4]. Players have landed into precarious situations[6]. Robbers and predators have used it as lures[9]. Not all related negative happenings can be mitigated, but as Katherine Ross aptly puts it: "Developers of AR games like Pokémon Go must realize that using the physical world as a gaming space makes them somewhat responsible for what happens there."[10].

Disabled people have qualms with how accessibility features aren't in place for them[11]. Male African Americans know themselves to be at greater risks of being targeted by discriminating police officers on the mere basis of appearing suspicious while playing[7]. Female players being harassed while playing keeps them from continuing[8].

Pokémon Go doesn't explicitly create these opportunities, but problems seeping into this amalgamation of physical and real worlds should be regulated[12]. Failures to address these issues don't take heed of ACM's code of ethics[3], as certain demographics aren't able to access technological recreation of a widespread cultural phenomenon.

Although its popularity was unprecedented by even Niantic, investigations into value centric design processes would have allowed them to consider user safety, unintended usages and accessibility. In VCD, products' associated values and risks are investigated conceptually, and empirically through user research. Diverse groups test prototypes, responding via qualitative methods. Developers then address raised concerns/ideas. Thus, necessary adjustments would have been made in order to cater to those wanting to play but uncomfortable/unable to implement all aspects of gameplay.

To a degree, it is the responsibility of Computing Professionals to be aware of and prevent possible problems created by their technology (e.g. by informing users to be vigilant as they play). An appropriate measure mitigating limited accessibility, could embody alternate play modes requiring less movement/precision when tailing or

catching Pokémon, enabling people with reduced mobility to participate. A virtual/limited walking (c/f physical) mode to follow Pokémon or hatch eggs would welcome people confined indoors due to illnesses or dangerous areas. Integrating voiceover features/visuals specific to visually/hearing impaired people, and colourblind friendly mode would be other ethical approaches.

Technology is so pervasive that it reflects our principles greatly. The app's valuing community spirit is commendable, however by normalising disregard for user safety and excluding members of society, social norms could later be reverted for the worse, if moral precedents were not set for augmented technology during its infancy.

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[3] https://www.acm.org/code-of-ethics “Professional competence starts with technical knowledge and with awareness of the social context in which their work may be deployed.” “Anyone else affected either directly or indirectly by the work should be respected throughout the process” “Computing professionals should foster fair participation of all people, including those of underrepresented groups. Prejudicial discrimination on the basis of age, color, disability, ethnicity, family status, gender identity, labor union membership, military status, nationality, race, religion or belief, sex, sexual orientation, or any other inappropriate factor is an explicit violation of the Code. Harassment, including sexual harassment, bullying, and other abuses of power and authority, is a form of discrimination that, amongst other harms, limits fair access to the virtual and physical spaces where such harassment takes place.”
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[12] https://onlinefitnesshelp.com/augmented-reality-games-like-pokmon-go-need-a-code-of-ethicsnow/ "Those that don't take such issues seriously and put effort behind enforcing their terms of service are essentially saying that harassers and abusers have free rein to do what they like."

Question 5

A. My proposal is a wearable with a small screen interface, which summarises tasks, concerns and urgencies in the navigation/functioning of the spaceship or tending to the customers. It alerts users via haptic feedback. The users can then holographically visualise more confidential information on the matter by tapping the screen.
B. Users require the perceptual capability of proprioception when being alerted to jobs requiring their attention. Additionally, visual perception allows them to process the information being displayed to them onscreen/holographically. These are chosen as commotion would decrease the chances for a user to percept an important notification auditorily, for instance.
C. In shipwide emergencies, all crew members receive notifications, but when persons had dealt with the problem, the alerts would stop on all devices once it was marked as complete. Also, passengers could call for service and the nearest available crew member would be notified of a new task to address.
D. The main goal of the device is to help crewmembers be organised not only on an individual scale but also a team one via an externalisation of the things they have yet to do, and enhance productivity by effectively distributing tasks based on a user's area of expertise and where their current position in the ship is, making sure that all tasks are dealt with adequately and distributed in a fair manner. This will all lead to the collective objective for smooth maintenance of the ship and the passenger journeys.
E. The crew members should not open up the holographic view in front of other people who have not been granted permission to access it, for example passengers or even other crew members, especially if the information was particularly sensitive and specific to their tasks. Thus there could be a locking system on the holographic view in place in more crowded areas. Also, perhaps the device could at first guide the user to navigate to their destination before giving more specific details of the task at hand.
F. The intended user experience of the technology is to be easy for the users to understand and swift to interact with in stressful environments and tight schedules. Its layout and contents should be clear but also detailed enough to provide useful, albeit perhaps slightly complex information.
G. The technology seeks to protect privacy when concerning confidential information (for example regarding blueprints of the ship, or a specific request that a customer may have made linked to confidentiality), and senses to not pop up in public spaces where there is much commotion. This is so as to avoid that information being misused by other persons, and unintended negative consequences later occurring. The technology can only be unlocked by the user associated with that technology.

   However, perhaps the product could have reflected community values a bit more, as it only carries a metaphor in name for the value of teamwork. It is a bit different from the usual way of delegating things in any group situation,

where usually a project manager exists. The technologically managed way of dividing up jobs is a bit individualistic. There is also little social interaction that it may cause, as it may not delegate time to social interaction for the users. Jobs are tasked to one person only in order to maximise productivity and reduce distractions, so the socialistic aspect of teamwork is lost which could cause some people to feel upset at that loss of level of interaction.

H. The technology will deliver the intended experience, as it is able to inform users of tasks and deadlines tailored to that user, allowing for maximum productivity and less stress, due to the work of the whole day being broken up into bitesize tasks.

   However, perhaps the technology's being regulated and rigid in its timings will not appeal to all crew members who like taking things at their own pace find it too controlling of their schedules and lacking in spontaneity.

   Also, crew members may be wary of becoming too dependent upon the technology, in the case it may be unstable at times and cause friction between crewmembers due to unsuccessful delegation of tasks.

   The technology, in order to successfully deliver the intended experience needs to make sure it prioritises the health of the users as well as trying to maximise their productivity (e.g by fitting breaks in) and does not give them a workload of more than they can bear.

   It may additionally annoy the users at times due to its confidentiality locking feature. They may have to make their way all the way to another room when trying to access further information about their task.