# CS6750 – Assignment P2

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## 1 QUESTION 1

### Registering in OSCAR

The current process that Georgia Tech Online users for enrolling in classes is not very direct. First, briefly describe one of the processes by which people look up and enroll in online classes at Georgia Tech.

1. LogIn to BuzzPort using 2-factor authentication
2. From BuzzPort Home Page, Click on "Registration – OSCAR" link
3. Click on "Student Services & Financial Aid" link
4. Click on "Registration" link
5. Click on "Look Up Classes" link
6. From drop-down, select desired term "Fall 2019"
7. Click "Submit" button
8. Click "Advanced Search" button
9. Select Subject "Computer Science" from Subject list
   Select Campus "Online" from Campus list
   Click "Section Search" link
10. Depending on if the student is in OMSA or OMSCS, find the appropriate class for the program enrolled in and record their CRN numbers.
11. On top menu, click "Return to Menu" link
12. Click "Add or Drop Classes" link
13. From drop-down, select desired term "Fall 2019"
14. At bottom of page. input CRN numbers from Step 10 and click "Submit Changes" button.

### Improving OSCAR Registration with Direct Manipulation

At Step 2, after clicking "Registration - OSCAR", class information from Step 10 should already be displayed. Since the student ID number is already known to the system, it should automatically know who the student is, what Program the student is registered in at Georgia Tech, and the semester selection should be switchable directly from the classes page. For each class, instead of writing

down CRNs, each class should be a UI element that can be dragged and dropped inside of a shopping basket on top of the page. The page should also have proper rules implemented such as “No more than 1 class in summer” or “no more than 2 classes in Fall or Spring”. For the columns that display statistical data (waitlist numbers, registrered number, remaining number, etc.), instead the information should be displayed as a pie chart, easily letting the user visually determine the number of open seats and waitlists in the class. Finally, when the appropriate amount of classes are dropped in the shopping cart, one button “Register for selected classes”, in the cart, should lead to a page to review the classes of interest, and on that page, clicking “Finalize registration” should finally register the student for classes. This redesign would reduce 14 steps to 5 steps, increase direct manipulation by mimicking a drag-and-drop experience which is easily translated between table touch screens, phones, as well as traditional PCs.

**Distance**

Distance is significantly decreased between the user and their goal of registering for the classes desired. Initially, the distance involved more than 14 steps. With the redesign, the number of steps can be reduced to about 5 steps, almost a three-fold improvement in efficiency.

**Direct Engagement**

Direct engagement is significantly increased. By implementing a drag-n-drop feature, the user is allowed a more natural interaction with the interface. The items in the interface also provide a way for the user to learn the interface and give clues exactly what to do in order to move on to next steps of the process.

## 2 QUESTION 2

**Door locks**

The door locks in my current residence must lock and unlock in opposite directions between the top and bottom lock. Initially, the process took mental concentration in order to remember which lock went locked and unlocked in which direction. Additionally, the orientation of the key to the lock is also different for each lock, forcing each door lock/unlock to involve pre-planning or multiple tries in order to get the door properly (un-)locked.

**Current thought process**

Currently, my thought process is to simply lock the upper lock to the right, then I know intuitively that the bottom lock is the opposite physical action from whatever I did to the previous lock. The task does not require as much thought anymore because muscle memory and shortening of tasks took over multiple-retry actions. Simplifying the task in memory helped reduce the Gulf of Execution the most. Simply by remembering the necessary actions for the first lock, the second lock becomes an intuitive action.

In order to design a computational interface for a door lock, one interface could be locking and unlocking the door with one's face, as facial recognition. Another one could use biometric sensors, and yet another one could use some form of security pad with either a number sequence or a signature pad where one can register a unique sign on the pad in order to unlock the door. For a 1st generation door-lock, an NFC based security access could be the easiest and fastest solution

## 3 QUESTION 3

- Using an advanced treadmill or exercise bike, including heart monitoring, calorie-counting, rate variation, etc.

**Visual Feedback**

For an advanced treadmill, visual feedback is provided through the screen display. The display shows information about the distance, grade, time, and heart-rate of the user. Additionally, some advanced software can calculate approximate calorie burn of the user and display it on the screen as well.

**Auditory Feedback**

Auditory feedback is provided on the treadmill, by way of beeps whenever menus are navigated and the actual treadmill noise which increases and decreases in sound as the speed of the belt increases/decreases as well.

**Haptic Feedback**

Haptic feedback is provided on the treadmill through the belt which directly notifies the user about the treadmill speed, immediately affecting the user to run in the same pace as to match the treadmill.

**Visual Feedback Design**

One visual feedback design could be the incorporation of Augmented/Virtual Reality. Integrating this technology would greatly increase the training time and enjoyment of any user. Currently, televisions provide a necessary distraction from the mundane task of running in one place. However, running inside Virtual Reality, where one can set goals to run towards specific end points, or within specific scenery would greatly increase any person's enjoyment on a treadmill.

**Auditory Feedback Design**

Auditory feedback could be incorporated in the form of an Artificial Intelligence coach. A coach is generally a necessary entity during exercise in order to motivate, correct, and push beyond physical limits any patron of an exercise facility. During a treadmill run, an AI coach can learn the running behavior of the user and motivate him/her to push beyond their limits to increase stamina and agility.

**Haptic Feedback Design**

Haptic feedback can be designed in the treadmill as innovations in the running treat and supporting structure. The treadmill currently bounces under a users weight and glides throughout the entirety of the run. If the tread could simulate actual running road conditions such as pavement, gravel or dirt, it would bring the user closer to imitating an actual run. Additionally, a treadmill's bounce reduces shok to the knees, but also decreases a user's perception of running compared to running on pavement. If the treadmills underlying structure could be improved to simulate the rigidity of pavement, the user would be much more inclined to believe that the treadmill completely replaces running outside.

**Balance and Acceleration**

Balance and Acceleration are human perceptions based on the vestibular system. By incorporating a Roll axis in the treadmill, where the treadmill can tilt to one side or the other, one can increase the difficulty of running on a treadmill missing from the current design. Considering that treadmill running is a relatively

mundane task, increasing the feedback from the treadmill to mimimck the outside world is a desirable goal for treadmill designers. Incorporating gradient increase, speed changes, programs that follow different rates and visual demonstrations and goal settings are good features. However, the feedback from the running platform still feels completely different from actual pavement of the street. Mimicking actual pavement with Pitch and Roll gradients throughout the tarmac would bring the user closer to experiencing a run similar to the one they would have outdoors. Additionally, installing sensors that would detect a users lean in their stride could help correct and bring attention to their vestibular system, enabling the user to evenly develop their musculoskeletal system using the treadmill, instead of over activating one side of their body or another.

## 4 QUESTION 4

**User Controlling Pace**

Priceline is a website used for booking flights, hotels, vacation packages and the likes. By its nature, an incomplete checkout will have some timeout function built-in so users do not hold up tickets which could be made available for other users. By filling out partial bookings, users are forced to finish their trip planning within the time frame required to book their seats.

One possibility for design improvement is to bring certain parts of the booking process closer to the user, rather than buried within the pages that follow an initial query. For example, If a user wanted to see the airline seats available, one would have to pick the dates, locations, flight time, destinations, and possibly even packages which all reside on their own independent web pages. If instead all this information was available and present on the same or subsequent single page, browsing would be much simplified. Additionally, another improvement could be to allow the user a certain time after booking the package, instead of before booking the package, in order to cancel the booking. This way, the use can follow through on their intentions and spend 15 to 30 minutes rethinking their itinerary. If in that allotted time they change their mind, the cancellation is still possible (even for non-cancellable bookings).

This way, the entire process of booking is completely controlled by the user of the website. From searching to booking the desired package, the user has full autonomy from time constraints. However, time constrains still exist but have

been moved and separated from the search function of the website. The user can concentrate on search first, and then worry about cancelling or keeping the booking afterwards.

**Emphasizing Essential Content**

Quora is a website which is often used by a general population for asking and answering any, and all, kind of questions. Considering that Quora keeps track of the user's interests, it does not filter the feed on the main page to exclude topics which are irrelevant to the user. As an example, the current feed displays answers to the questions "Which celebrity shocked the world with their amazing weight loss but quickly got obese again?" while the user preferences are set only for topics regarding Business, technology and photography. Although this topic is easy to ignore, others can distract the user from their main query or purpose of visiting the site and side track on reading through posts completely irrelevant to the task at hand.

Without any special technological advancements (i.e. artificial intelligence) Quora could easily implement filtering for user-specified articles to include in the main feed. Simply by listing only relevant information, Quora may become much more user-centered rather than content-centered. Additionally, Quora could implement Artificial Intelligence agents in order to track interests, latest queries, reading, and posts by the user as well as search behavior in order to tailor make news feeds for each individual. By tracking the behavior of each user and adapting an AI agent to each user's needs, Quora could be a personal website for each user to make their own.