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Group Members:

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Project Name: Emergency Fatigue System (EFS)

Team Name: HSACH

Specifics: Monitoring Driver Fatigue and other Influences, and informing drivers of potential issues. Monitors; heart rate, irregular movement whilst sitting, irregularities in eye movements (pupil dilation / heavy eyelids)

Devices Required:

* Heart Rate monitor, seat sensors, eye tracking cameras, inbuilt tv/digital display, GPS, external vehicle sensors (road positioning, closeness to other cars)
* Also a device that can keep track of the number of yawns a person has at the beginning and as they progress through the journey.

Product Abilities:

* Detect driver fatigue
* Suggest driver to rest based on detected fatigue levels (including mobile mapping)
* Automatic emergency call in the event of an accident when the airbag pops out.

Product Delivery:

* Inbuilt into vehicles pre-purchase

Potential Issues:

* How to inform the driver of the issues without being too distracting or demanding
  + Various audio alerts in order to prevent the car from further endangering the driver
  + Visual alert on the digital display
* Marketing to car manufacturers/government

Target Market (personal and geographical):

* Drivers / Car Manufacturers

People we are planning to help/monitor:

* Drivers

Planned timeline:

* First after everything is fitted in cars and properly tested we should first try with a dummy. This is to test that all the aspects we wish to accomplish are implemented correctly.
* First try it on a small group of truck drivers as they are the most prone for long distance driving
* Then move the trail to cover bus drivers and other public transport like trains and metro
* Then taxi drivers and commercial drivers.
* Should be accomplishable in near future as most of the technology already exists, but in other applications (a lot of modern cars have a digital display and cruise control functions)
* 2.5 years from project start to market

Required resources:

* Heart Rate monitor
* Seat sensors
* Eye tracking cameras
* Inbuilt tv/digital display
* GPS
* External vehicle sensors
* Communication with various car companies in order to implement the product.
* Program built into car operating system
* Extensive research surrounding fatigue effects
* Testing Requirements
* Some sort of vehicle
* Robot able to emulate human functions

Product environment:

* Cars, anywhere that people drive, night-time
* Aimed at car and truck drivers

Working with the group: good first-time experience with people having innovative ideas and thinking outside the box.

We settled on this topic because we thought it would be a necessity when it comes to driving and being sleep deprived is a common cause for accidents.

Contribution: everyone contributed well enough and there was equal participation from everyone in the group making it easy on all of us.

For week 2,

* We went through the Analysis Phase for the project wherein we spoke about the requirements and constraints of the project.
* The Design Phase, wherein we spoke about the hardware required, the essential software components and designed the system architecture.
* Under the Process Models, we chose the Incremental Model as our most suitable process model.

For week 3,

• What tasks did you have assigned to you?

I had to label all the arrows, add arrows between items and add rounded elements into the diagram and label them.

• Did you need to wait for any other tasks to be completed before you could start your tasks?

Yes, I needed all shapes to be drawn to add arrows between all of them and label them.

• Did you have anyone else in your group asking (politely or otherwise) if you had completed a certain task yet?

Yes, Hung, our team leader, politely asked us if we completed our tasks on time so that no one would have to wait for too long to do their tasks.

• How could these tasks have been assigned (but still equally distributed) so that the project could run faster?

All the work was equally distributed to all team members and the time was well managed.

• Would any more information at the beginning of the project been useful for you or the team?

Yes, as we were confused with the understanding of assigning tasks to individuals and also creating columns.

• What would your team do differently to better do a project like this if you were assigned a similar one in future weeks?

Nothing as we work well as a team and help each other understand the project.

• When doing project task allocations in other units, do you think it is important to look at the task dependencies when allocating them and scheduling them? Why? How could team member availabilities and workloads affect this?

INDIVDUAL TRELLO PROJECT:

Working individually helped me gain perspective towards this project and helped me understand the project on a deeper level.

For week 4,

We had to set up Github and Anaconda.

The meaning of section 2 is that, various readings of the accelerometer and gyroscope are given for the wrist, chest, ankle and hip sensors and these reading are commuted to a graph.

For week 5,

I had to open up my GitHub, Trello and google drive accounts. We shared the Git repository, Trello board and Google drive created, amongst ourselves and downloaded the necessary folders and datasets needed to run the code, into the repository. My group leader assigned each of the group members tasks to complete individually, on the Trello account. I was in charge of Collaboration Part 2: Signal Processing. Since all my team members thought answering the questions to the code sections on one computer would be easy, as we can just once commit and push the work just once into our local repositories once all sections of the code were answered, which the tutor said was allowed, I gave my teammate(who pushed the repository to everyone else) the answers for section 2 of the code which was signal processing, therefore contributing my part to the team. Once all the sections of the code were answered, the teammate, who’s computer had all the work done on, committed and pushed the repository into the other team members local repositories.

For week 6,

We expanded on the week 5 project, each team member was given a task to do on Trello, all tasks where completed together by answering all the questions divided section wise, each section given to each team member, the tasks once completed, were pushed and pulled on GitHub by each team member and the project was completed.

As a group we answered all the questions together to save time and help each other. Understanding GitHub is improving for me.

For Week 7,

We came up with equivalence classes for

* leaps years,
* months with 30 days,
* months with 31 days,
* checked special conditions for years like 1752 and 1900,
* dates out of range,
* months out of range
* years out of range,
* dates don’t’ exist

36th of November 2002, 37th of 14th month, -1 year

There were dates of the same equivalence partitions, like dates which fell in a leap year.

5 tests passed and 9 tests failed.

1,1,2000 is a typo

31,4,1980 because April has only 30 days

31,11,1980 because November has only 30 days

29,2,1900 this is because 1900 is not a leap year as it’s not divisible by 400

5,9,1752 changed from the Julian calendar to the Gregorian calendar which wiped out the dates from 3rd September to 13th September as invalid dates

36,11,2002 cause the date is invalid

21,13,2001 since it’s an invalid month

4, 9, 1752 the date doesn’t’ exist

37,14,-1 since it’s an invalid date, month and year