Senior Design: Week Two Progress Report

Team 3: Micheal Frith, David Larribas, Devin Moore, Benjamin Smith

1 Group Time Synopsis

1.1 Team efforts and overall status

Current Group Leader: Ben Smith

THE interaction with the instructors was useful in the second week. They allowed the group to narrow our focus in both societal problem and design feature set. The societal problem of health and wellness is adversely affected by the level of physical activity within the society. We are delivering an engineering solution that addresses inactivity as a particular cause to societal health and wellness. The narrowed focus allowed a more concrete feature set to be developed in this weeks assignment. The development of this engineering specification went much more smoothly than the problem statement. Everyone will be relieved to finalize the technical feature set this upcoming week.

TABLE 1
Weekly Team Meetings

Topic	Hours
Tuesday: Presentation review and problem statement editing	3.0
Thursday: The "Tatroing" debreif	2.0
Thursday: Outline and section assignment of Design Document	1.0
Friday: Design Document review and focus narrowing	5.0
Friday: Belkoushe Q & A	1.0
Saturday: [Online] Design document first draft	1.0
Sunday: [Online] Design document beta typesetting	1.0
Monday: Weekly planning and review	1.0

1.2 Presentation review and problem statement editing

Before the class meeting we finalized our project statement document and submited it into the Hive. We also decided on what we need to have in our presentation and finished our Power point Presentation. We then distributed the work amongst the group members are practiced the presentation.

1.3 The "Tatroing" debreif

The group was advised that inactivity is not a societal problem. Inactivity does effect a socities overall health and wellness.

1.4 Belkoushe Q & A

Belkoushe was kind enough to meet with our group on thursday morning to discuss our project's direction. We were able to get a better idea of the requirements. We finished the meeting by discussing our new direction and making sure each member knew what they had to do.

1.5 Design document first draft

We had a voice conference over the internet to collaberate our ideas for the feature set of our system. We also discussed and layed out the outline for the Design Document and assigned sections for every one to work on.

1.6 Design document beta typesetting

Sunday night we were able to compile the majority of the document into LaTeXand discuss further work required. This ensured that our templates are working correctly and we can continue with the document.

1.7 Weekly planning and review

We got together in the morning to check up on every one's progress, and discussed the required tasks for the upcoming week. Together we decided on each member's responsibilities and the time required for this next stage.

2 Individual Activity Synopsis

2.1 Micheal Frith

Synopsis of past week's work

I spent a large amount of time going over existing designs of ebikes. I then started researching into motor options, which has proven to be a more difficult task than anticipated. Difficulties include chosing between internally geared or direct drive hub motors, as well as power requirements. I contributed to our Design Document as well.

TABLE 2
Micheal Frith: Tasks Assigned - Last Week

Task	Hours Worked	Status
Researching Existing Solutions	6.0	100%
Researching Chosen Solution	5.0	90%
Creating Feature List	4.0	100%
Researching Assigned Features	8.0	80%
Researching Implementation	2.0	50%
Setting up Schedule/TeamGantt	1.0	10%
Creating Design Document	5.0	100%

TABLE 3
Micheal Frith: Tasks Assigned - Next Week

Task	Hours Worked	Status
Gantt Chart and Scheduling	3.0	100%
Component Research/Selection	4.0	60%
Work Breakdown Structure	5.0	100%
Researching Implementation	3.0	20%
Creating Design Contract	4.0	100%

Special Problems or other reporting

Getting a process established for getting work done more efficiently has been challenging, as we've each been spending 30+ hours a week these 2 weeks.

2.2 David Larribas

Synopsis of past week's work

The main goal of this week was to find our focus in the societal problem and design. I spent a large portion of the beginning of the week in discussion with the group and instructors. During this time, I researched various pre-existing designs that solved the problem. After this I narrowed my focus to the lighting system. I researched lighting solutions that have already been implemented and looked at the reviews to determine which products were performing the best and why. I also looked into selecting parts for the lighting units and which motor/battery/controller system to use.

TABLE 4
David Larribas: Tasks Assigned - Last Week

Task	Hours Worked	Status
Discussions and Research Solutions	12.0	100%
Research Chosen Solution	4.0	90%
Creating Feature List	4.0	100%
Creating Design Document	8.0	75%

TABLE 5
David Larribas: Tasks Assigned - Next Week

Task	Hours Worked	Status
Research Lighting Implementation	2.0	20%
Research Power Module	2.0	10%
Gantt Chart and Scheduling	6.0	100%
Component Research/Selection	4.0	60%
Work Breakdown Structure	5.0	100%
Researching Implementation	2.0	20%
Creating Design Contract	6.0	100%

Special Problems or other reporting

Predicting hours seems to be a problem as we are usually underestimating the time it takes us to complete tasks. I have been lucky so far as I have not had much strain from other sources, but in the future I will need to allocate time more efficiently.

2.3 Devin Moore

Synopsis of past week's work

The beginning of the week consisted of researching and discussing possible features for the system. Once they had been compiled we broke them up into groups to research and report the various aspects of each feature including why it is relevant, what has been done before, how it would be implemented, and resources needed. After we had finished, we

began typesetting the document in LaTeXand refining our desired layout. There was a substantial amount of discusion on required features and possible parts to order.

TABLE 6
Devin Moore: Tasks Assigned - Last Week

Task	Hours Worked	Status
Researching Solutions	3.0	80%
Researching Chosen Solution	5.0	90%
Creating Feature List	4.0	90%
Researching Assigned Features	4.0	80%
Researching Implementation	8.0	80%
Setting up Schedule/TeamGantt	0.5	10%
Creating Design Document	7.0	100%

TABLE 7
Devin Moore: Tasks Assigned - Next Week

Task	Hours Worked	Status
Refine Problem Statement	2.0	80%
Selecting and Ordering Parts	3.0	70%
Schedualing Gantt Chart	5.0	20%
Work Breakdown Structure	5.0	100%
Creating Design Contract	10.0	100%
IMU I2C Interface	8.0	20%
Cell Phone App	4.0	10%

Special Problems or other reporting

Difficulty understanding what is actually due. The difference between the design document and the design contract was not clear to me.

2.4 Ben Smith

Synopsis of past week's work

This week consisted of technical research. Pace accelerated once we had features to investigate. The majority of my research went into control systems and the feasability of using heartrate as a control mechanism. There are interesting models that have been developed with quality documentation. One particular IEEE article used a Hammerstein model to control the speed of a treadmill based on heartrate of the user. This control system showed much better control of a heartrate than a PID based control system.

TABLE 8
Ben Smith: Tasks Assigned - Last Week

Task	Hours Worked	Status
Researching Solutions	5.0	80%
Researching Chosen Solution	5.0	90%
Creating Feature List	4.0	90%
Researching Assigned Features	4.0	80%
Researching Implementation	10.0	80%
Setting up Schedule/TeamGantt	0.5	10%
Creating Design Document	8.0	100%
LaTeXdocument bugfixes	1.0	100%

TABLE 9
Ben Smith: Tasks Assigned - Next Week

Task	Hours Worked	Status
Refine Problem Statement	2.0	80%
Scheduling and Gantt Chart	5.0	10%
Creating Design Contract	10.0	80%
Work Breakdown Structure	5.0	0%
IMU I2C interface	15.0	20%