

Senior Design Meeting

Minutes - 9/12/22

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- Roger - presenting title slides of powerpoint
- Way - proposals with a whole bunch of sections require a lot of people working on different sections
- Haki - we pulled sections from the request
 - explained motivation for the project
- Roger - we pulled the design objectives from the product request
- Haki - we want to have it work like a regular wall outlet
 - ability to measure environmental conditions
 - must include sensors from preliminary document
 - Design constraints - also pulled from the assignment
 - system needs to be able to function autonomously
- Roger - Design metrics - looked at the one in the assignment, including weights, sizes of various components
- Haki - relevant codes and standards, pulled them from the IEC
- Roger - worked with these standards during internship and they were useful
- Henry - we aren't going to meet one of the requirements
 - Roger → we're gonna get back to that
- AMPR - concepts applied from other classes
 - ↳ pretty much a little of all of our classes/college

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- Haki - concepts we need to learn things from the slide
- Will Oaks - runtime comparison between solar generator and Honda
 - we will probably need multiple batteries
- Wey - priority is to be able to achieve the same load, not necessarily same duration
- Henry - we could probably get about half run time with 2 batteries
- Wey - if we get a 100 amp hour battery, that's about an hour at the same load
- Borris - so maybe stick w/ 1 battery
- AMR - explain what would be in the users' manual
- Wey - how much would a battery cost as a part of a kit vs/ separately
- Roger - explain what the GUI would include
 - home page with relatively simple design
- Haki - Zheping's user interface drawing for home screen
- Wey - what happens if I press arrow buttons, want more detail
- Zheping - there will be more detail as it gets built
- Wey - how do I control/collect sensor data
- Borris - would probably exist automatically through the cloud

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- Wey - I want to be able to look at the data for exactly when I want/ force it to collect data for a certain period of time - to make a CSV file
- Borris - we can set it up to do that and still collect and send it to the cloud
- Roger - Safety precautions - from slide
- Wey - need to consider the danger mostly from the batteries - management plan to ensure we're safe when attaching things to batteries
 - batteries need to be covered
- Roger - Estimated cost
- Henry - brief search of an approximate BOM
 - ↳ solar kit around \$2100
 - with other stuff there will be more cost from arduinos etc, \$4000
- Wey - that number seems reasonable, sounds double through the department
- Haki - preliminary design from last week
- Borris - elaborating some on overall system structure
 - will probably be using multiple arduinos
- Wey - do sensors interface digitally or analog
- Borris - we haven't picked a specific sensor suite so it's not decided yet

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- Wey - analog signals are kind of a bitch
- Borris - some options have different problems we don't really want to tackle
- Wey - do people know how to use I²C?
- Borris - has experience with it
 - pin constraint is a problem with using 1 arduino vs. more than one
- Wey - we can figure out these details later
- Borris - we might have a mix of analog and digital
- Roger - testing plan - unit testing, component testing will be important
 - solar kit example from assignment, two more options for possible solar kits
 - 4 mock diagrams of what it could look like
 - 2 motors to move the solar panel
 - display on front for easy access for user
- Wey - all one unit?
- Roger - this is a very simple mock up it's not so detail
- Borris - are inverters really that heavy? yes
- Henry - we could probably find a different capacitor
- Wey - it is definitely going to be heavier than 100 lbs how will that be managed - focus for next week
- Wey - motors - linear actuators are probably a better option than steppers b/c they can't hold without voltage

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-Borris- inverters can be lighter based on outputs

-Haki - what's missing for next week?

-Wey - list of drawings / figures that will get made this year?

-they will be a lot of work over the year

-we need a mechanical drawings expert

-Adam Smith can help with this, as well as how to build a wire harness

-structure the proposal

-Rager - we will make subsections for all the parts of the table of contents

-Wey - users' manual will be a lot of work

-there will be a module quiz tomorrow

-any questions for him?

-Haki - how detailed should the list of drawings be?

-Wey - we just need some mock ups at this point

-AMR - should it be weather proofed

-Wey - yes - for safety