

Senior Design Meeting - Minutes

10/18/22

- Wey - we need to have clear goals and start making real pictures of our goal
 - make preliminary designs its okay if it changes
 - we need to set goals that move towards the November Deliverable
 - need to work towards SOW (Statement of work)
- Zheping - we need a uart port for Audio
- Wey - what are people doing
- Borris - demo set up in the other room to start working with arduinos, sensors, I²C
 - trying to read sensor data, problem is with arduinos not I²C
 - we have a preliminary arduino dashboard but its a little more complicated than expected to use
 - need another website of some sort for data downloading page
- Wey - need to be able to move the solar panel, would that go through the website
- Zheping - Autonomous tracking will not probably go through the website
- Wey - user defined routing from the website
- Borris - we could host that on the arduinos

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- Borris - we are having Arduino Connectivity issues currently
 - we haven't been having issues sending data to Arduinos
- Zheping - we need a year's worth of data depending on Chico's data
 - how many paths do we need?
- Wey - no more than 6 seasonal modes, no finer than half hour movements
 - push button for user to change the season
 - no big memory storage is necessary, rolling data collection
- Borris - we can store longer term data in the dashboard
 - just have to connect to the arduino's wifi to collect it
- Wey - the only continuous sensor we really need are temperature and maybe current monitoring
- Henry - working on a pretty detailed model of the mechanical structure, its on a lab computer
 - weight estimate by the end of the week
 - would separating batteries work to help with weight
- Wey - it should be practical in how it comes apart, not just making it technically meet the weight requirements
- Zheping - showing GUI mock up
- Wey - user guide needs to explain this in detail

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- Zheping - the buttons will control the stepper and linear actuator
 - sensor data is on a separate screen so it only refreshes the screen when necessary
- AK - compass - how does it work? should we add a simple compass on top
- Zheping - this one will show sensor data
 - worried about using screen in the sunlight, LCD is probably not the best option
 - E-ink screen will be a better option
- Borris - there is an extra e-ink screen in one of the labs we can try out using it
- AK - update on drawing matrix and start to users' guide, please help with questions that I ask about people's various systems
- Roger - trying to find more info based on models people are working on
- Hakei - including data on weights of various elements
- Roger - 4 wheels better than 2, with a handle
- Borris - what's the terrain like? that would dictate one better option
- Zheping - 4 wheels usually on bigger suitcases
- Wey - 2 wheel carts can be more maneuverable

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- Wey - look up dock-carts, they can carry a lot
 - won't be sturdy enough but something like that
 - will have to think about weight distribution with that
- Will O. - started working on wiring harness diagram
 - gonna get sensor related changes from Borris
 - start looking at actual hardware to make it happen, sleeves for wires
 - how are we gonna mount wires - maybe zip ties
- Roger - rough estimation of sizes for models
- Wey - wire disconnects for pieces that come apart
- AK - disconnect between Henry and Roger's 3D models
- Roger and Henry - no connection between models
 - they'll be coming together this week
- Joe - looking at sensors for angle of solar panel
 - two sensors could get angle, 3-axis movement sensing
 - sensors are coming soon
 - two pieces of the sensor can only be so far apart
- Roger - let him know where sensors need to go so it is in the sensor model
- Wey - our angles don't need to be super high precision
- Tim - looking at power outputs of Arduinos and power consumption of the system

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- Wey - we need a simple power budget for all the devices on the final product
- Tim - WiFi kit has a larger power draw
- Wey - where are drivers for the motors? who's doing that?
- Chiko - working on solar tracking for seasonal solar panel movement
 - different paths for 4 different seasons
 - this model will be specific to Easton
- Zheping - we need to measure the effective angle when the solar panel arrives
- AK - it should be moved to the optimal decision in the middle of the stationary time rather than either end point
- Wey - we should focus on moving it so it helps power generation, not so it hurts it
- AK - can we also add a warning light for when its gonna move
- chiko - explaining all seasons' generation capacity
- Wey - can we calculate a $\frac{d\theta}{dt}$ from this info on the sun?
- chiko - yes that should be doable
- Break for individual work