**Quân:**

Scope and Limits

With 3 months we cannot realistically made a “true” AI chair with the personnel and fund we have so our goal is to make a backrest that is connect to an AI that can switch between 2 to 3 preset modes depend on the data it recorded from the user when they sit on it. We made only the backrest since it is one of the basic but most important part of the ergonomic chair and it can show our project’s potential in how easy it is to see it change the user’s posture. We only do 2 to 3 preset modes due to the complexity of both AI programming and the settings we are able to produce with many moving parts, because of that we settled for 2 or 3 preset modes as the option for the AI to make decision to simplify the process while still accomplishing the goal of the prototype. We choose our goal because it can show both the basics and the potential of our project: A chair that record your physical data and analyze it to give you the best setting for your health and comfort. It can also serve as a base line so we can make improvement since we can continue the project by building upon it by adding more moving parts to the chair for more flexible settings, update the AI to increase its speed and accuracy and even making the AI able to flexibly change the parts of the chair to fit the user best instead of restraining it to preset setting. Since our goal is just a step on the roadmap we made (more detail in testing), if unknown risks or accidents affect our workflow, we can fall back to a step that while not as detail will still accomplice our goal of showing the basic of the project and in reverse if we reach the goal before the deadline, we have a plan to go further to make a more impressive prototype that will have more chance to attract investors.

Tools and Technologies

-An ergonomic chair from a trusted brand

-3D scanning machine from Scantech3D Vietnam called GOM SCAN 1 to scan data from user in the beginning stages.

-Microsoft Azure AI Platform to create the AI because it is popular for AI development and easy to use. Dong has some experience in this application.

-Human sized dummy for testing.

-Sensors and parts to modify the chair as the prototype will be a normal ergonomic chair modified with parts that adjust the chard base on recorded data.

Testing

The testing will be done after the backrest of the chair has been link with the computer and will be done in parallel with the project to make sure the project is going in the right direction. The first test would be if the chair backrest would change setting with a computer command. After that is complete, the next test would be for the backrest to switch setting smoothly while a dummy is sitting on it. At the same time as that, the AI would be tested to see if it recognized different height of the sitter. The final test that we hope to reach is to connect the AI to the chair backrest and put different dummy on it to see if it can use the height of the dummy to switch between 2 to 3 settings that we premade. The test would need the prototype product and 2 to 3 dummies with different height and will only need 2 computers and a minimum of 2 members to do. The final test is where we hope to reach before the deadline. If we reach it early, we would add more premade setting to test the AI with more diverse dummy and have a team member sit on it to give feedback on how smoothly the transition between setting was. With these tests, we would be able to track our project base on the goals of complete these tests and make sure we are moving in the right direction. By the time the final test is complete, we would have a working AI backrest that can be used to showcase our potential to investors.

Timeframe

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| Week | Activities |
| 1 | Assigning roles in project and parts on assignment 3 |
| 2 | -Dong finish team profile  -Dat finish overview  -Nghi finish plan and progress  -Quan finish Scope and Limits + Tools and Technologies |
| 3 | -Dong begin to code the website, finish tool +skill and jobs  -Dat finish aim  -Nghi finish roles + testing  -Quan finish risks+ group processes and communications |
| 4 | -Dong finish coding the website  -Dat help Dong put data on the website  -Nghi check the parts for typo and wrong information  -Quan finish timeframe |
| 5 | -Dong and Nghi (team AI) research about AI  -Quan and Dat (team chair) research about ergonomic chair |
| 6 | -Team AI continue their research  -Team chair determine which brand’s chair to use as design |
| 7 | -Team AI continue their research and start testing with AI  -Team chair research on a newly order ergonomic chair |
| 8 | -Team AI continue their research and testing  -Team chair testing the chair backrest. |
| 9 | -Team AI start building the AI for the chair  -Team chair start working on mechanic parts for the chair |
| 10 | -Team AI continue building the AI for the chair  -Team chair build and test mechanic parts for the chair |
| 11 | - Quan connect computer to chair backrest and sensor to AI  - Dat begin testing the chair using manual command and AI using dummy.  -Nghi and Dong continue to work on AI base on feedback |
| 12 | - Quan connect AI to chair backrest  -Dat start basic AI chair testing using dummy  -Nghi and Dong continue to work on AI base on feedback. |
| 13 | -Quan work on wireless connection  -Dat continue testing using dummy  -Nghi and Dong continue to work on AI base on feedback. |
| 14 | -Quan install wireless connection  -Dat testing the respond speed of prototype  -AI team work on polishing and improving the AI |
| 15 | -Quan check and polish wireless connection  -Dat testing using real people.  -AI team work on polishing the AI and check AI for bugs |
| 16 | -Quan and Dat run as many tests as possible  -AI team check AI for bugs and finalizing the project  -Team finalizing the project |

Risks

Just like every project, there would be risks that we might meet while doing it, because of it, it would be best if we can identify them and plan to prevent them or to deal with them and mitigate their damage. The first risk we identified is the difficulty of designing an AI, we have to tackle this first since the project will need an AI that will work with high precision. Because designing an AI will not be an easy task, our solution to this problem is to give our AI engineer 4 weeks of researching in contrast to the 2 to 3 weeks that other member will have for their research. The second risk that we might have to deal with is the safety issue when connecting the chair backrest with the AI, because the first prototype will not be wireless, there might be risk of electric shock when used. To deal with this risk, we will check the backrest very carefully when we connect it to the AI and will recheck it every time that we test it. The third risk we thought about is the backrest working not as intended during the testing process hurting the user, this would be a very bad thing to happen and should be avoid at all cost. Because of that, during all test we will use a human size dummy instead of a real person, the real person test will only be done during the final weeks when we are sure the risk won’t happen.

Group processes and communications

Communications between group members is one of the most important parts of our project and one of the elements that we have to considered first. Past experience and some research we have done has shown that communication breakdowns between group members are the most common cause of project failures. Because of that, the first thing we do is find a time backrest where all members are free so the meetings can take place. After consideration, we have decided to have a weekly team meeting on every Sunday afternoon and a quick meeting for progress checking every Thursday night aside from the time we spend at school after class. The team meeting is long and is usually for deciding plans base on the information and progress of the group or for the group to finish a part together while the quick meeting is only 20 minutes max and use for check on everyone’s progress. We use Microsoft Teams for team meetings because we all have a Teams account link to our student number and we all have experience using it, and for short meeting we usually use messenger because of its ease of access. If a group member does not arrive to the meetings on time without a reason, we would try and contact them on messenger first, then we would call them using their phone number. If they do not answer we will have to catch them up during the next meeting and if they do not have a reason for their absent, they would be assigning to help other member with their job in addition with their own part. These decisions and rules are decided and agreed by team members in the first meeting to make sure everyone knows the rules and time.