

SHARD

Structural Health and Rupture Detection

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Advisor Meeting Dates:

03/09/2023

Client:

Dr. Willard, FIT Aeronautics Professor and NASA Engineer

Client Meeting Dates:

02/10/2023

02/17/2023

02/24/2023

03/03/2023

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1 Current Milestone Progress

| Task | Completion % | Julian | Matthew | To do |
|---|--------------|--------|---------|---|
| Create and finish poster and e-book page | 0% | N/A | N/A | We plan to do this with our whole interdisciplinary team; they have not started on this yet |
| Complete webpage and toolbar implementation | 75% | 0% | 100% | Further toolbar actions will be added next milestone |
| Incorporate sensor interface into the main software | 0% | N/A | N/A | Focus was spent elsewhere |
| Allow for user to rotate hexagon | 90% | 100% | 0% | Rotation of hexagon upon another already rotated hexagon does not work properly |
| Start simulation mode (at least the framework) | 100% | 100% | 0% | N/A |

2 Discussion - Tasks

2.1 Task 1: Create and finish poster and e-book page

The plan was to start and finish the poster and e-book page during this milestone. However, this task has been pushed back to milestone 6 because this is an interdisciplinary project and we plan to work on this with all our team members.

2.2 Task 2: Complete webpage and toolbar implementation

The main format for the webpage has been completed and more toolbar actions, specifically file actions like save and save as, will be implemented next milestone if there is sufficient time.

2.3 Task 3: Incorporate sensor interface into the main software

This task was not completed and has been pushed back to milestone 6 because the sensors have not been fully tested and implemented by the other team members. We will most likely use a simulatory sensor application to test our software.

2.4 Task 4: Allow for user to rotate hexagon

The user now has the ability to rotate hexagons using the scroll wheel. Moving the scroll wheel up and down will rotate the hexagons incrementally at 15 degrees. Scroll wheel up rotates up and scroll wheel down rotates down with the axis of rotation being the selected face.

2.5 Task 5: Start simulation mode (at least the framework)

The framework for simulation mode has been laid out in the UML diagram that is in the discussion of contributions sections for Julian. The implementation of the simulation will be straightforward in that a new class that inherits from the `sGLCanvas` class will allow it to be placed inside the user interface in where the user will be able to see it. The various windows handling events will be programmed according to the functions of the simulation mode, which is to start the simulation, stop the simulation, add projectile events that will affect the simulation in play, etc.

2.6 Other miscellaneous tasks accomplished:

Adding of hexagons is now done in three steps by first selecting a face which to add a hexagon from, and then rotating the hexagon in whichever desired angle, and then confirming the hexagon at that position by pressing the enter key on the keyboard.

3 Discussion - Contributions

3.1 Julian Herrera

Worked on the ability for users to rotate hexagons, as well as for the user to add hexagons once clicking on a face of another hexagon and being able to rotate the added hexagon in whichever manner. Worked on designing a uml diagram for the simulation portion of the software.

3.2 Matthew Manley

Worked on the SHARD webpage and toolbar actions/implementation. Also worked with the other team members to discuss Reaction Damage Control System (RDCS) implementation ideas and helped the team test the new sensors.

4 Next Milestone Plan

| Task | Julian | Matthew |
|---|--------|---------|
| User and or Developer manual | 0% | 100% |
| Demo video for showcase | 100% | 0% |
| Poster and e-book page with group | 50% | 50% |
| Finish simulation mode | 100% | 0% |
| Finish sensors and software interface if applicable | 50% | 50% |

5 Discussion - Planned Tasks

5.1 Task 1: User and or Developer manual

This task will focus on developing a manual for the user or developer. The manual will include a brief overview of the SHARD project itself and then delve into the purpose of our software. Then, the manual will guide the user on how to properly interact with the application and the different ways to use it.

5.2 Task 2: Demo video for showcase

This task will focus on developing the demo video that will be used for the showcase. The demo video will consist of showing the simulation portion of our application. The demo video will also incorporate (if available) the hardware system with the sensors connected to the software application.

5.3 Task 3: Poster and e-book page with group

In this task, the poster and e-book page will be created. This task was moved to this milestone since this is an interdisciplinary project. Thus, we will work with our other team members to design an appropriate poster and e-book page to properly represent all aspects of the SHARD project.

5.4 Task 4: Finish simulation mode

This task will focus on implementing and finishing simulation mode to be used for the software. What needs to be done is the transition between model editor to simulation mode, as well as the possibility for the user to add simulatory projectile events as input to the simulation.

5.5 Task 5: Finish sensors and software interface if applicable

This task will focus on the full software application having access to the software interface. It is possible that this will not occur because of the necessary requirements that must be obtained from the non software team members. In the case that we do have the necessary requirements necessary to complete this task, there will be a mode in the software that accounts for the hardware present.

6 Client Meetings

- February 10, 2023 - discussed with the GSA our current progress and any updates
- February 17, 2023 - discussed with the GSA our current progress and any updates
- February 24, 2023 - discussed with the GSA our current progress and any updates
- March 3, 2023 - discussed with the GSA our current progress and any updates

7 Client Feedback

- N/A

8 Faculty Meetings

- March 9, 2023 - discussed with Dr. Silaghi our progress so far

9 Faculty Feedback

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