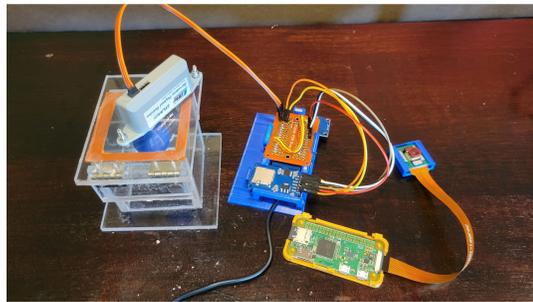


SPLASH

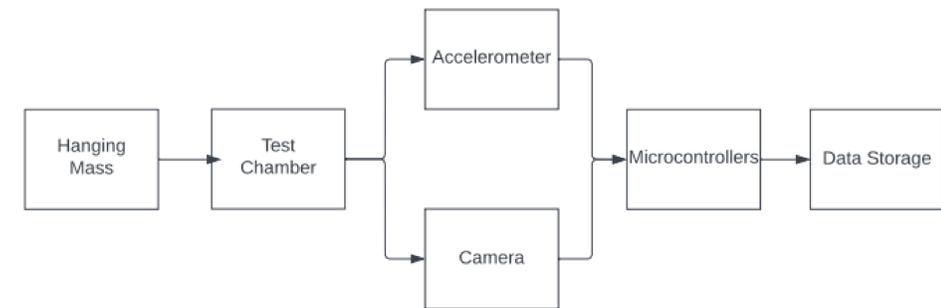
Scientific Payload for Liquid Acceleration Study using High Power Rocket

Project

- Our project tests the effects of a rocket launch on a mass dropped in a liquid chamber.
- We videoed a mass being dropped in a liquid during a rocket launch to see how it reacts.
- We can then review the footage and identify ways to limit problems for future launches.



System



Methods

- We built an acrylic chamber filled with liquid to drop the mass into.
- We used a pre-existing Payload release mechanism connected to a programmed control board to time the release of the mass.
- We used LED lighting and high-resolution cameras to record the drop and splash inside of the payload.
- We used an on-board accelerometer to determine the proper point in the rocket's flight to drop our mass.
- We used liquid thickening powder to reduce the splashing due to the rocket's vibrations.

Conclusion

- The prototype is watertight and will drop the hanging mass from the payload release mechanism when the rocket reaches 9 G.
- The time and acceleration data before and after the release will be recorded in an SD card.
- We may want to do further research to test the different components we used under loads of 9 – 10 G to verify no errors come up during future launches.
- We learned that sometimes using existing solutions can be a little tricky and may not produce the result you expect at first.
- We would like to see this experiment carried out at larger scales or with different types of liquids to analyze the results.

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