Analysis and Results

Analysis

For prototype 3, we focused on putting both subsystems together and getting the whole system to work. The circuitry subsystem was complete, so we focused on building the final design and attaching the circuitry properly. After that was complete, we added little embellishments like gears for aesthetic appeal.

Test 1: Circuitry test

For the first test, we focused on seeing how the LCD screen and LED's would work on the final prototype. We did this in order to determine if the circuitry subsystem was functioning properly after wiring everything up together and attaching it to the chest plate.

Once the circuitry was attached, we tested the subsystem by attaching the heartrate sensor to a member of the group and watching the LED's and LCD screen. We found the results satisfactory, with the LCD screen displaying the images we wanted and the LED's lighting up on every heartbeat.

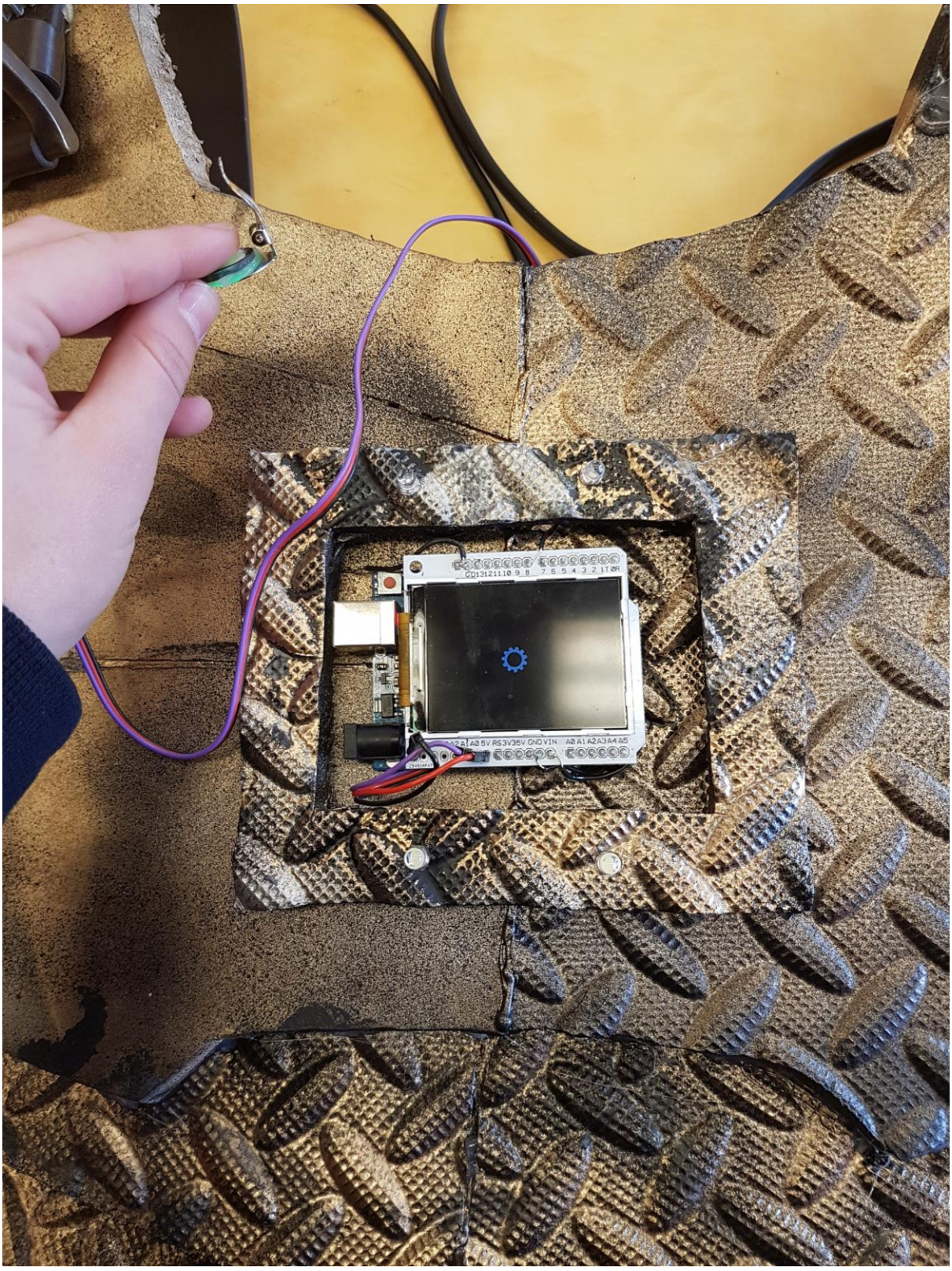

Figure 1: LCD screen displaying image and LED's lighting up to the user's pulse.

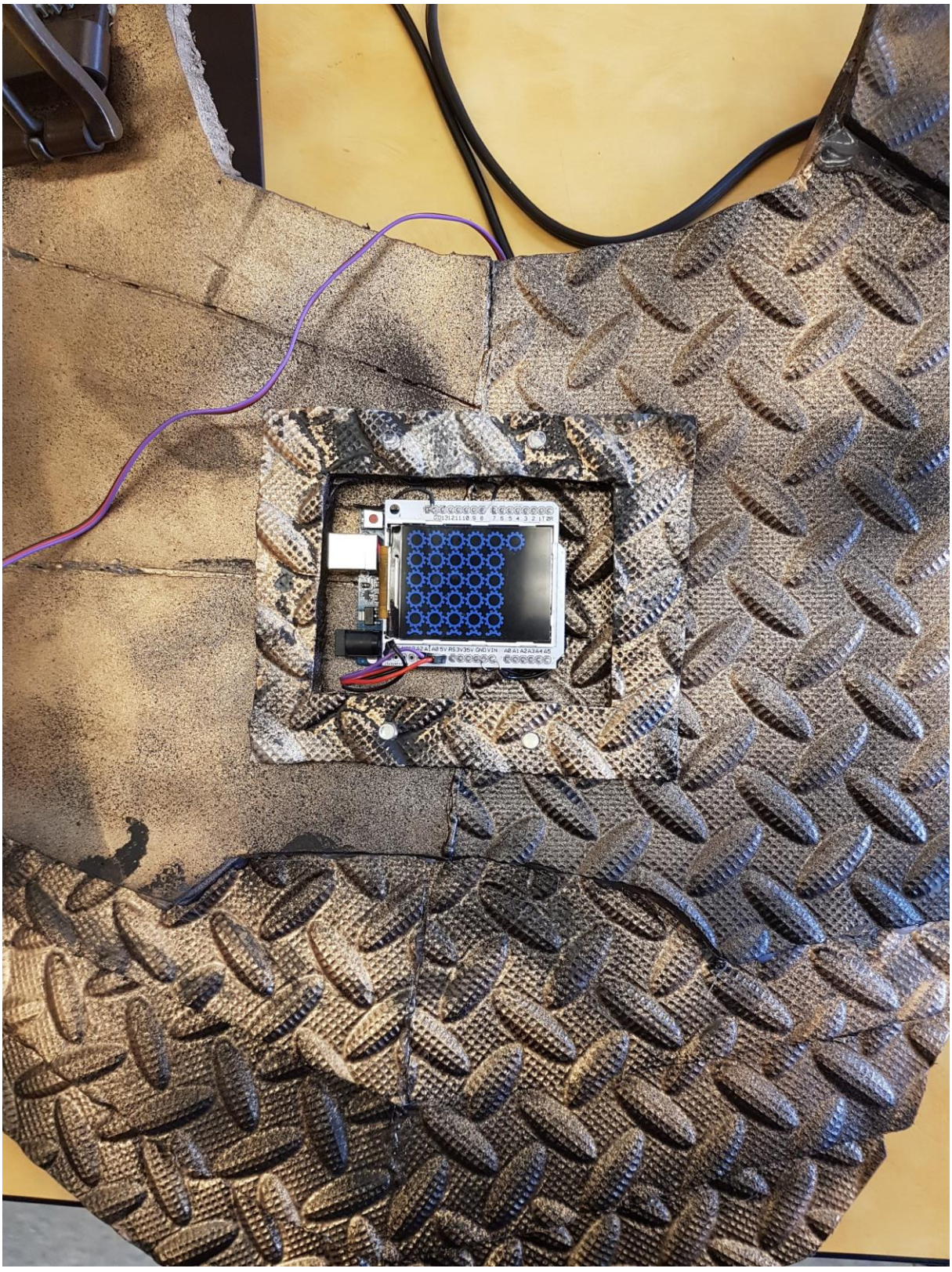

Figure 2: Image appearing on LCD screen

Test 2: Chest plate strength

For the second test, we wanted to see how strong the chest plate was, and how much weight it could support. We built the chest plate by gluing foam together, so we were worried about the chest plate not being strong enough to stay together.

We tested this by placing the chest plate on a group member and applying a bit of force to the chest plate by pulling down on it slightly. We found that the chest plate held together well and did not break under the force. Next, we made the member wear it for about ten minutes to get an idea of what wearing the piece for a long period of time would be like. We determined that it was feasible to wear the prototype for long durations and that it would hold together well during its use.

Figure 3: Member of the group wearing the final prototype – front view.

Figure 4: Member of the group wearing the final prototype – back view.

Results

From the tests run, it was determined that the final prototype is working properly and both subsystems have been integrated together well. There were no issues with the final prototype or the testing.