SKATRIXX

Hardware Test

URBANSPORTS
PERFORMANCE CENTRE

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Preface

We have tested the hardware by applying it in practice. Then we did a full run-through with the hardware and software together and documented this process. During this process, we critically reviewed what went well and where there is still a need for improvement.

We applied our hardware to a real skateboard to even get a better understanding of how practical our hardware is when used in real circumstances.

Powersource

The first thing we noticed was that the hardware needs to be powered will it's attached to a skateboard. For now, we used a power bank to keep it running. But this is not ideal because of the size and because it does not fit easily on the axles of the skateboard.

We thought of solutions for this problem but we haven't worked them out. We had three main solutions. Number one is; to generate energy by means of a dynamo, the second one is by generating energy by shock absorption. And the third one is by powering it with batteries. This is based on smartwatches that can be powered for a month on small batteries.

Sensor (Digital Motion Processor)

The sensor we used can gather rotation and acceleration in all directions. In our first test, we only used the rotation function of the sensor to rotate a 3D skateboard inside the software. The main problem we faced was Calibration. This problem was caused because the skateboard wasn't synced properly with the sensor. The start position of the 3D model was not the same as the sensor.

Eventually, Nazar managed to fix the calibration and now it is synced correctly.

Height Measurement

Another problem is that the sensor can not measure height by itself. This function was highly sought after by the stakeholder (Raymund). But to get an accurate height measurement there needs to be implemented another sensor. Although it is possible to calculate the height through this sensor it is too hard and not accurate enough to do this in this project.

One solution for the height was to use the skater's phone to calculate height. But this didn't fit in the time we had for this project. But it could be used in further development of this product.