

# IoT Project Bulletstorm: Proposal

## Group Members

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## Project Description

The target of the project is to develop a game of the top-down-shooter genre that is controlled using a physical weapon. It aims to resemble an arcade-style shooter.

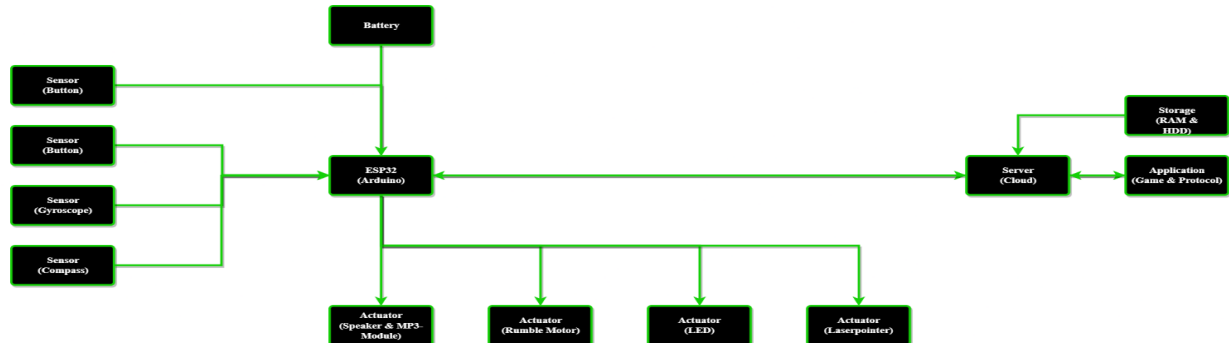
The basic game-loop of the game results in the player aiming at the screen using a real weapon. The player will have to fend off an unstoppable onslaught of enemies as well as dodging all their attacks. There will be a wide range of possible virtual weapons as well as abilities or powerups like healing and damage increases to help out the player survive.

The physical weapon will have a gyroscope and compass attached to detect any movement of the weapon as well as several buttons to control in-game actions such as firing. In addition to those features the weapon will have included a rumble motor as well as leds to grant more physical feedback to the user.

## Equipment List

- . 3 buttons
- . 1 laserpointer
- . 2 rumble motors
- . 1 accumulator
- . 1 ESP32 microcontroller
- . 2 smart led chains
- . 1 mp3 module
- . 1 speaker
- . gyroscope + compass (3 axial module)
- . breadboard
- . connectors, transistors etc.

## System Architecture



## Software Requirements

- . Python3 (PyGame) & Backend
- . Arduino IDE (C++)
- . Docker Container

## Project Timetable

- . **2<sup>nd</sup> of October – 1<sup>st</sup> of December:**
  - Game Development (Rene)
    - engine
    - textures
    - level design
  
- . **15th of November - 1<sup>st</sup> of December:**
  - Weapon Design (Fabian + Rene)
    - prototype design
    - wood construction
    - planning + building
  
- . **1<sup>st</sup> of December – XMAS:**
  - Weapon Board Configuration (Fabian + Rene)
    - data preprocessing (Rene)
    - protocol communication (Fabian)
    - wiring (Fabian)
  - Server Setup (Fabian)
    - Connection Test
    - Docker Container
  
- . **1<sup>st</sup> of January – End of Project:**
  - test runs (Fabian + Rene)
  - documentation (Fabian + Rene)
  - preparation & presentation (Fabian + Rene)
  - fine tuning (Fabian + Rene)