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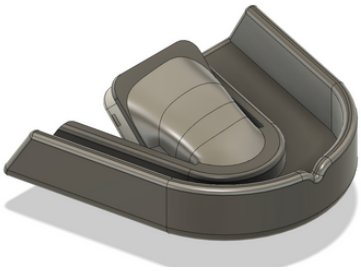
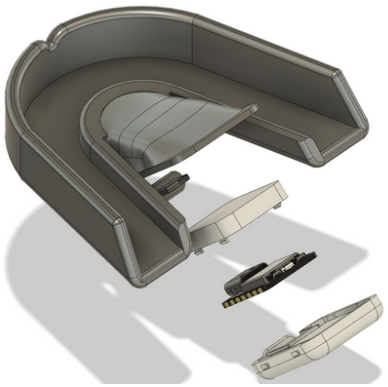
INSTRUMENTED MOUTHGUARD - AWRC

Sheffield Hallam University | Advanced Wellbeing Research Centre





What?

- Design an instrumented mouthguard to **increase the accuracy of measurements by 50 %**. Performed an initial analysis based on athletes fits.

How?

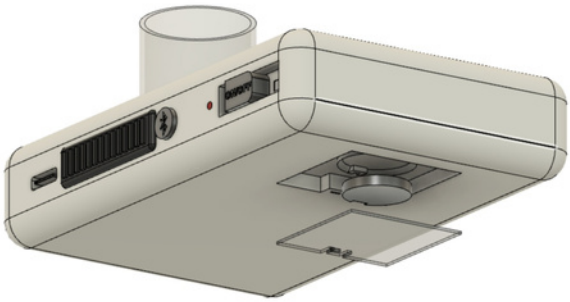
- Used **Fusion360** to 3D design the device.
- Embedded microelectronics through **Seeeduino XIAO microcontroller**.
- Programmed in **C++ (Arduino IDE)**

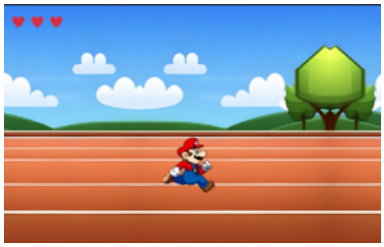
Results

- Design fulfilled the purpose with **90% accuracy**. Provide a **cheaper solution (20$)** respect to current technologies **(200$)**.

SMART PEAK FLOWMETER UNIBO - BUFALINI HOSPITAL CESENA

Project Idea published on a local journal [Corriere Romagna - Cesena 23 August 2023]





What?

- Electric smart peak flowmeter to **increase pediatric patient compliance** through gamification
- Increase by **100 % the amount of data** about asthmatic pediatric patients in undeveloped countries

How?

- Designed on **Fusion360**
- Programmed the game through **pygame** library using **raspberry pi 4**
- Programmed an app through app designer for BLE transmission of data.
- Directly interacted with doctors and product specialists.
- **Medical device classification and FMAEA**

Results

- **Increased gamification** in tests over pediatric patients.
- Provided an effective solution to **increment the number of data** relative to pediatric asthmatic patients at home **(predicted increase of 100%)**.