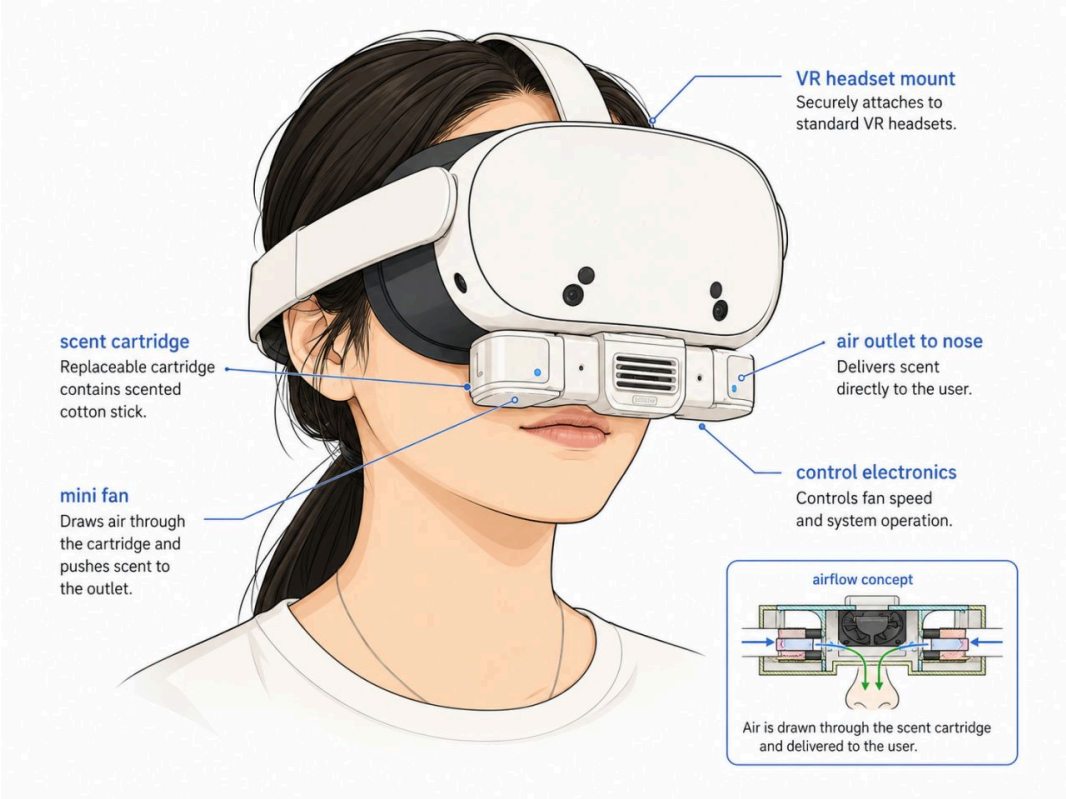
Low-cost olfactory device for virtual reality

Status	Available
Project type	Erasmus internship, Final project/thesis
Research area	Electronics, Immersive technologies, Product design, Prototyping, Virtual reality
Skills involved	3D printing, Arduino, CAD, Electronics, Mechanical design, Prototyping



Project summary

We are looking for a motivated student to join IQS Barcelona for an Erasmus internship or final project/thesis between September and December 2026. The exact dates are flexible.

The project will focus on developing a low-cost prototype of an olfactory device for virtual reality applications, inspired by existing open-source wearable systems. At this stage, the work will focus mainly on

building the physical prototype, including mechanical design, 3D modelling, 3D printing, basic electronics, and microcontroller control.

Why does this project matter?

Virtual reality experiences are becoming increasingly immersive, but most systems still focus mainly on visual and auditory feedback. Adding smell to VR could make virtual environments feel more realistic, engaging, and multisensory.

This project is a creative opportunity to explore how simple, low-cost hardware can deliver olfactory stimuli in VR applications. It is especially suitable for students who enjoy hands-on prototyping and want to work at the intersection of engineering, design, and immersive technologies.

Main objective

The objective of this project is to design, fabricate, and test a first low-cost physical prototype of a wearable or VR-compatible olfactory device.

What the student will do

- Review existing open-source and low-cost olfactory devices for VR.
- Design or modify 3D CAD models for the prototype.
- Prepare and fabricate parts using 3D printing.
- Assemble the device's mechanical structure.
- Build simple electronic circuits for basic actuation and control.
- Work with a basic microcontroller, such as Arduino.
- Document the design process, prototype iterations, and final system.

Methods and tools

The project may involve:

- Mechanical design
- 3D CAD modelling, for example, using SolidWorks, Fusion 360, Inventor, or similar
- 3D printing
- Basic electronics
- Arduino or similar microcontrollers
- Hands-on prototyping
- Technical documentation

Expected outcome

By the end of the project, the student is expected to produce:

- A first physical prototype of a low-cost olfactory device for VR applications.
- CAD files and design documentation.
- A simple electronics and microcontroller control setup.
- A short technical report or thesis/final project document.
- A portfolio-style summary of the prototype development process.

Recommended background

This project is suitable for students from mechanical engineering, industrial engineering, mechatronics, electronics, biomedical engineering, product design, or related areas.

The student should ideally be able to:

- Design or modify 3D CAD models.
- Prepare and fabricate parts using 3D printing.
- Assemble simple electronic circuits.
- Work with basic microcontrollers, such as Arduino.

Previous hands-on prototyping experience is very welcome, but the project can be adapted to the student's background.

Practical information

Period: September to December 2026

Dates: Flexible

Location: IQS, Universitat Ramon Llull, Barcelona

Mode: On-site

Financial compensation: There is no financial compensation from IQS. This opportunity is most suitable for students supported through Erasmus+, their home institution, or another mobility/final project scheme.

How to apply and ask questions

Interested students should send an email to ana.desousa@iqs.url.edu by 19 July 2026 with:

- CV
- Motivation letter
- Portfolio or examples of previous projects

The portfolio can be simple. For example, it may include an end-of-course project developed for a class, a prototype, a CAD model, an electronics project, or any other hands-on work.