

# ElderUP: Voice-based assistant for early detection of depression in Elderly people via Artificial Intelligence

## The Challenge

In 2017, [the Spanish National Health Survey](#) reported that the incidence of depression diagnoses is 4.0% and 9.2% in men and women, respectively. Furthermore, the women lead the prescription and consumption of antidepressants and stimulants compared to men (7.9% versus 3.2%, respectively). With the COVID pandemic and consequent restriction measures, the number of people affected by depressions has dramatically increased. According to the [EU statistics](#) related to mental and behavioural disorders, Spain counts 10.9 psychologist per 100 000 inhabitants which means 2120 psychologist for 47 million of people.

The current standard for the diagnosis of depression relies on in-person patient review by highly trained clinicians. Those methods are subjective, time consuming and dependent from the honesty of the patient. With the increase of depression worldwide, some **intuitive, automated, simple, affordable, and reliable means of depression recognition** are required.

## The Market

Our voice-based virtual assistant is designed for the users less used to digital technologies. The market lacks integrated solutions for detailed and exhaustive diagnosis based on scientific evidence, as well as prevention and therapies totally personalized to the needs of each user.

## The Asset

ElderUp is a simple **digital solution** for taking care of our beloved's mental and emotional well-being. Its artificial Intelligence-powered algorithm **can spot in real-time early signs of depression using audio/video interactions with user**. The aim of the app is to suggest actions to improve the mood according to the emotional status of the user and can be interconnected with primary care services.

We are offering an **AI-based virtual assistant** that processes and analyses in real-time the **voice, language, face, and the data provided by the user on their emotional and physical well-being**. The algorithm, and therefore the virtual assistant, constantly self-evolves based on the patient's daily routine and voice/video-interaction.

Our vision is that this virtual assistant will be useful to classify the patients according to the severity of their symptoms and to favour the high-risk patients to avoid long waiting list to access public mental health services.

## The asset value

ElderUP overcome the traditional access barriers to psychological treatment: cost, time, distance, and stigma, all of which are relevant for older adults. Moreover, it introduces a three levels (data, audio, and video) confirmation of the symptoms associated with depression making the diagnosis highly accurate.

This tool can be applied to younger users (less than 60 years old) after further training, focused on this population. Furthermore, our virtual assistant holds the potential to being exploited in other fields such as advanced liver disease. More precisely, our plan is to adapt our virtual assistant to spot signs of neurocognitive impairment in patients with hepatic encephalopathy that have a survival probability at 1 and 3 years is 73% and 38%, respectively.

A virtual health agent for mental health classification in elderly people using demographic, audio, and video data.

The App interacts with person while combining and analysing the data in real time.



## Scientific Team main contact

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## Stage of development

- TRL3; Experimental proof of concept
- The platform has been partially validated on data from 140000 patients

## Exploitation plan

**Spin off creation**

## Contact

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