

ZophIA



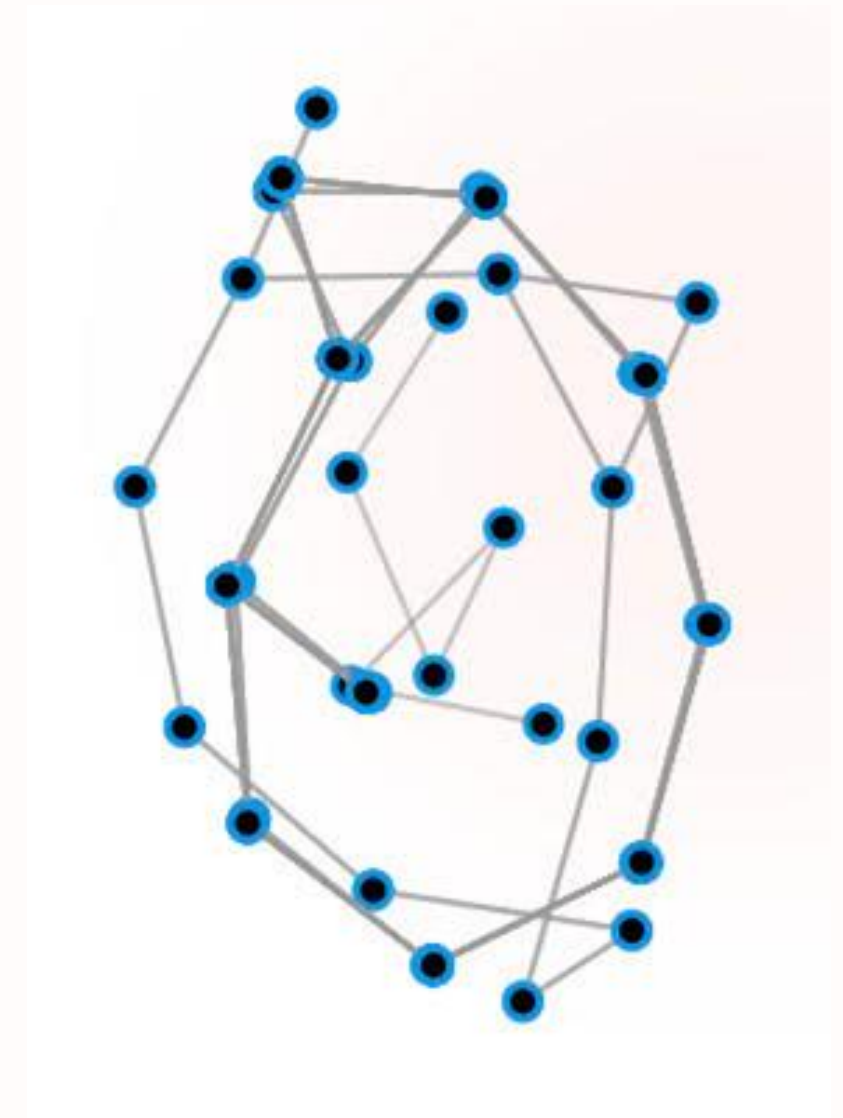
**HARVARD T.H. CHAN**  
SCHOOL OF PUBLIC HEALTH

**HEALTH SYSTEMS**  
INNOVATION LAB

# About ZophIA

We are a tool to **support health professionals to help mental health patients on their journey**, with faster and more assertive diagnosis.

**Combining AI with Mathematical models, using the patient's speech to identify traits of mental health disorders.**



# The Problem

## High demand


**50% of the World Population** will be affected by a mental disorder.(1)

## Silent Collapse

**Forbes**  
**As Doctors And Hospitals Are Overwhelmed, could A.I. Based Innovation Be An Oasis?**

**Finance & economics | Ouch**  
**Why health-care services are in chaos everywhere**  
Now is an especially bad time to suffer a heart attack

## Few Professionals

**Recife / PE**   
Ulysses Hospital  
12 psychiatrists and  
12,000 patients  
**1 per 1,000**

# The Problem

A.I alone cannot solve  
the problem

## MIT Technology Review

ARTIFICIAL INTELLIGENCE

**Hundreds of AI tools have been built to catch covid. None of them helped.**

By Will Douglas Heaven

July 30, 2021



Business

Markets

Tech

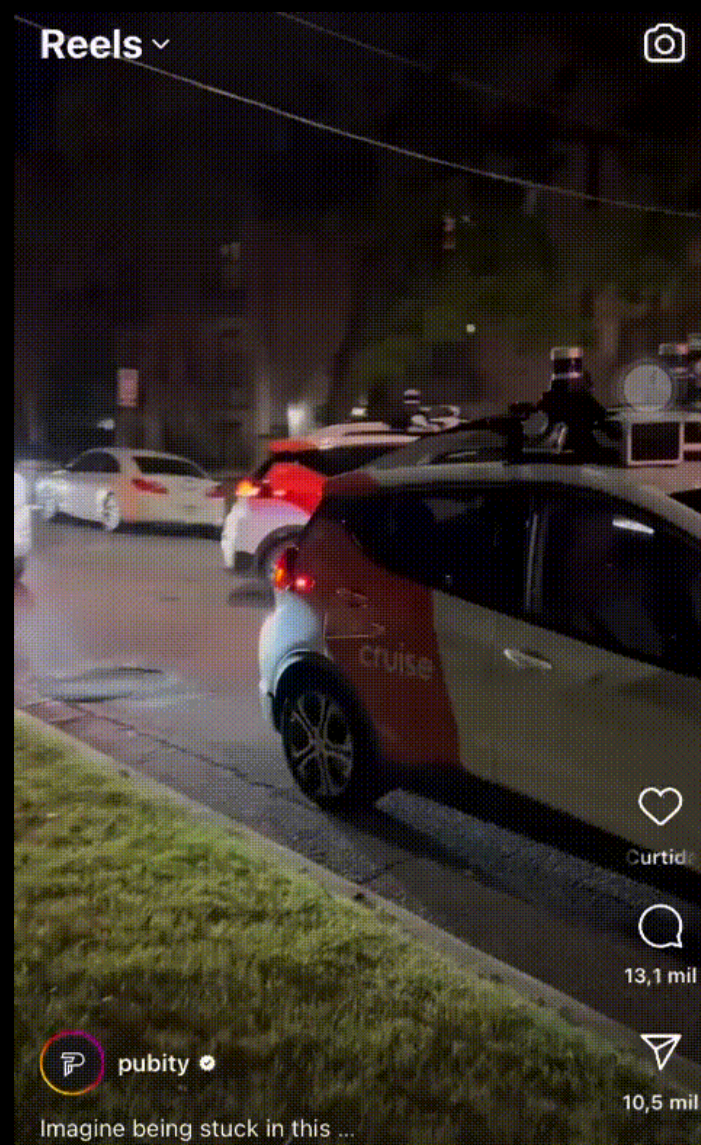
Media

Calculators

Videos

## 'Complete meltdown': Driverless cars in San Francisco stall causing a traffic jam

Reels



Curtide



13,1 mil



10,5 mil

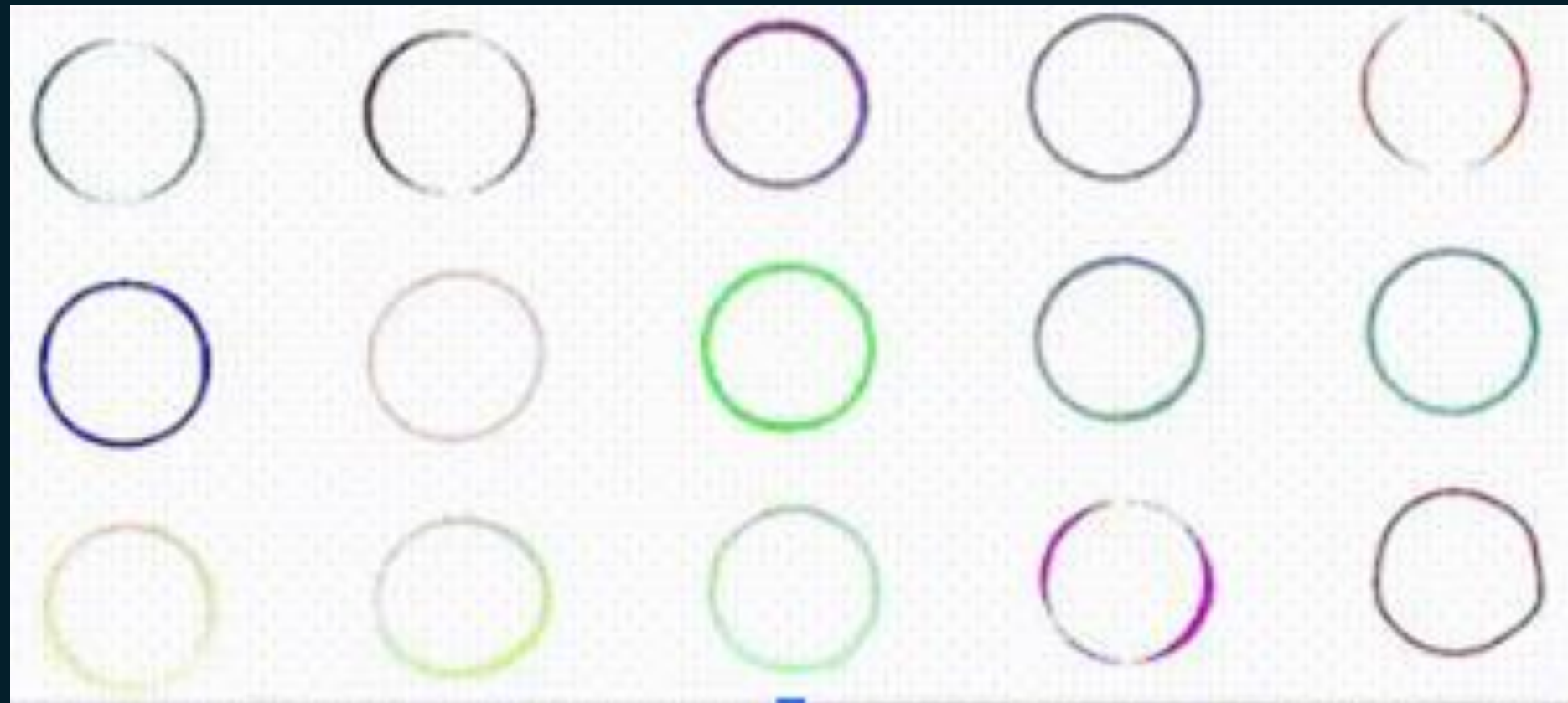


pubity

Imagine being stuck in this ...

# How we solve it

We use **mathematics (geometric) models** to help correct the errors of classical AIs.



Source: Grafo proprietário.  
<https://link.springer.com/book/10.1007/978-3-642-61923-6>

# How we solve it A.I + mathematics models

## Published Paper

### FIRST PROTOTYPE

We used 139 speeches classified as:

- schizophrenic
- with schizophrenic traits
- without any relation to the disorder

AI = 62% >>

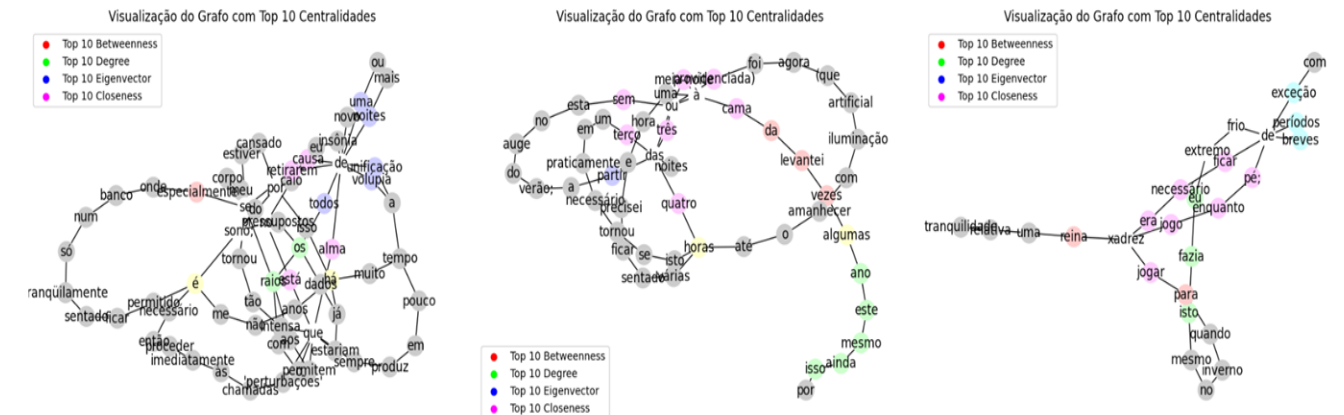
AI + Mathematics models = 99%  
(Geometry)

### Article

## Classification of schizophrenic traits in transcriptions of audio spectra from patient literature: artificial intelligence models enhanced by geometric properties

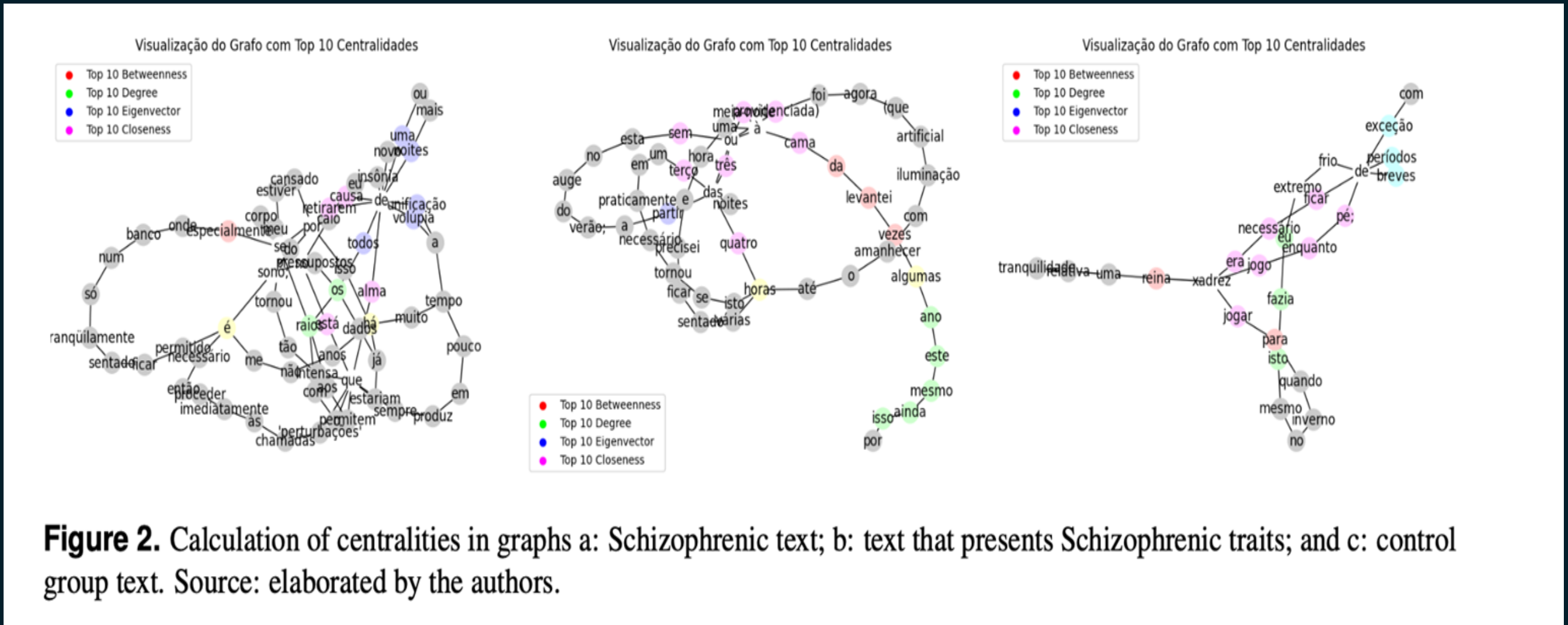
April 2024 · *Brazilian Journal of Health Review* 7(2):e68803

DOI: [10.34119/bjhrv7n2-337](https://doi.org/10.34119/bjhrv7n2-337)



**Figure 2.** Calculation of centralities in graphs a: Schizophrenic text; b: text that presents Schizophrenic traits; and c: control group text. Source: elaborated by the authors.

# How we solve it A.I + mathematics models



**Figure 2.** Calculation of centralities in graphs a: Schizophrenic text; b: text that presents Schizophrenic traits; and c: control group text. Source: elaborated by the authors.

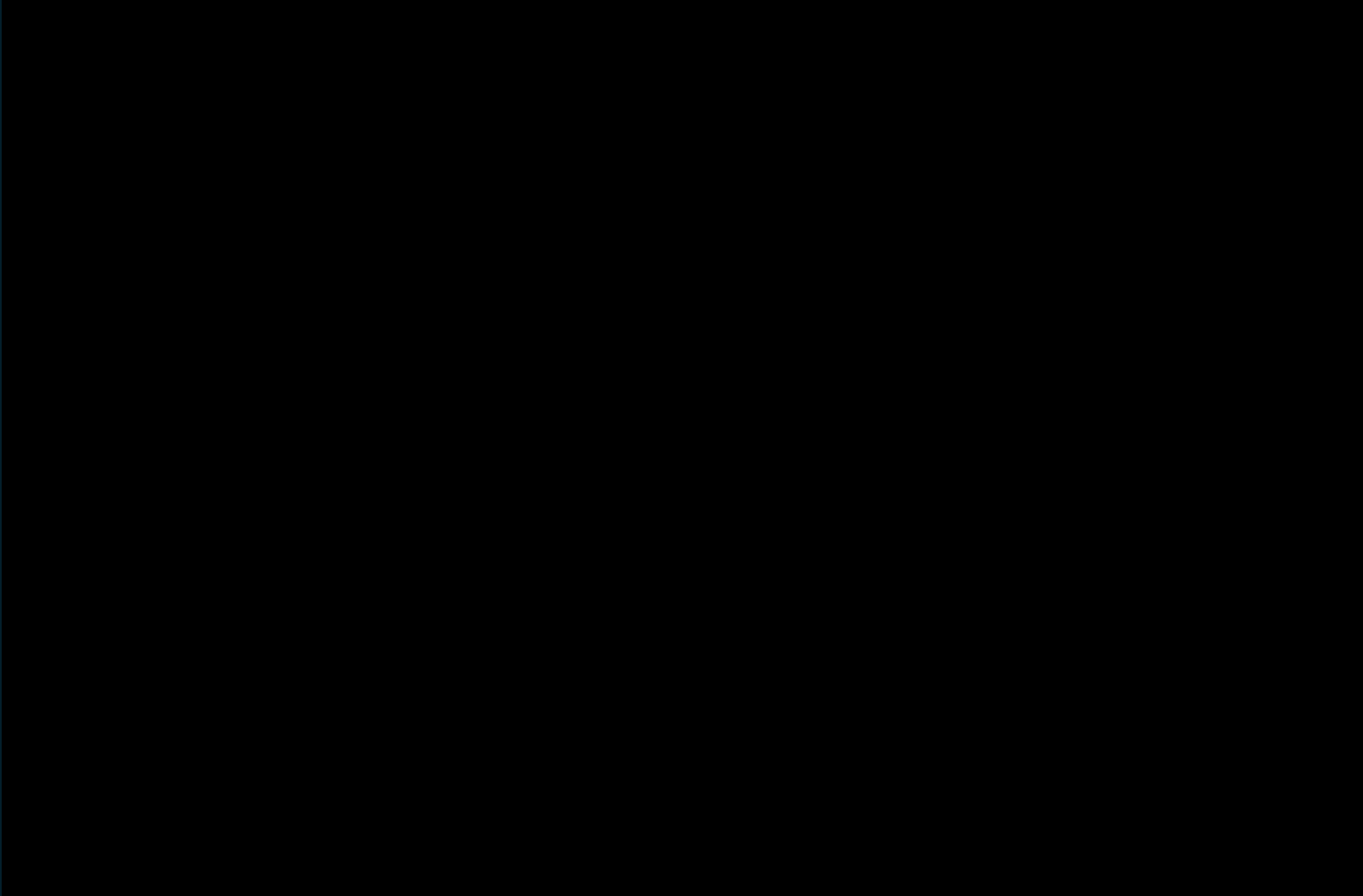
Real Prototype



Patient



Doctor



# The market

**120 Millions**

Health Professionals  
in the World <sup>(1)</sup>

**300 Thousands**

Primary care  
Health Professionals  
in Brazil <sup>(2)</sup>

**Goal**

10%  
of this market  
in 3 years
















Source:

(1) <https://www.medicaleconomics.com/view/across-globe-6-4-million-physicians-needed-in-132-countries-facing-shortages#:~:text=Doctor%20density,and%205.2%20million%20pharmaceutical%20personnel>

(1) <https://www.statista.com/statistics/796082/mental-health-workforce-per-population-rate-worldwide-by-type/>

(2) Ministry of Health - Brazil

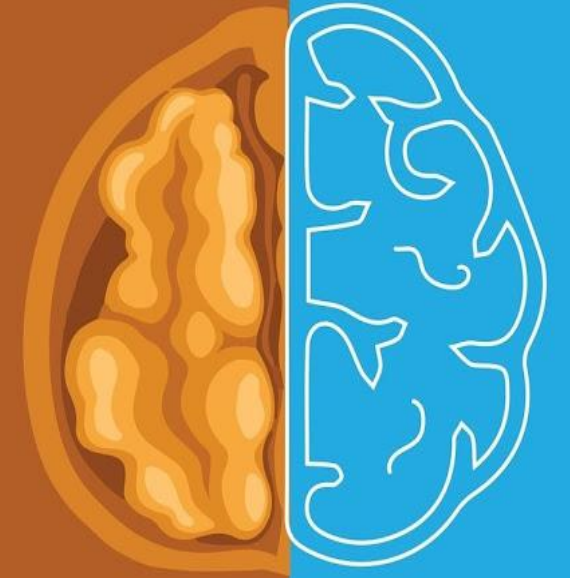
# Competitors

	A.I	Mathematics
		
		
		
		
		

# Target Market

- B2B**  
Hospitals, Clinics, Health Plans, Teleservices, Medical Systems and Companies for their employees.
- B2G**  
Systems used in public hospitals.
- Doctors & Pharma**  
Doctor being the user of the tool and for Pharma we can generate reports based on monitoring patient treatment.

**NATURE ≈ HEALTH**



# Business Model - SaaS

1

## Subscription model / API

Subscription model for access to the platform and mental health services.  
Monthly or Annual, by number of patients/usage.

2

## Expansion of disorders

Q1 and Q2: Depression and Bipolarity  
Q3 and Q4: Burnout and Anxiety

3

## Reports

Provide reports on the effectiveness of treatments by monitoring patient progress.

# TEAM

## SCIENTIFIC ADVICE



João  
Ricardo



Jones  
Albuquerque  
Founder

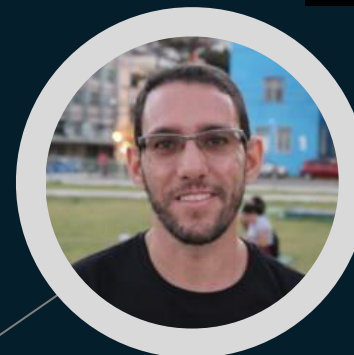


Silvana  
Bocanegra



Danielle  
Pepe

## TECH & MATH



Paulo César  
Marques  
TECH

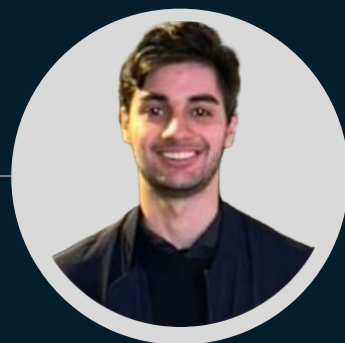


André Victor  
MATH

## SCIENTIFIC TEAM



Maria Helena



Túlio Pimentel



Lucas Rafael



Lis Calheiros



Arthur Almeida



Arthur Monteiro

# Previous cases using our mathematics model

2014

arboviruses

2016

arboviruses

2019

cholera

Saúde na Copa: The World's First Application of Participatory Surveillance for a Mass Gathering at **FIFA World Cup Brazil**

Onicio Leal Neto <sup>1,2,3</sup> ; George Santiago Dimech <sup>4</sup> ; Marlo Libel <sup>5</sup> ; Wayner Vieira de Souza <sup>6</sup> ; Eduarda Cesse <sup>6</sup> ; Mark Smolinski <sup>5</sup> ; Wanderson Oliveira <sup>7</sup> ; Jones Albuquerque <sup>3,8</sup> 

empreendedor social

App e balão vão monitorar epidemias e segurança durante **OLYMPICS**



FINANCIAL TIMES

Malawi drone initiative takes drugs to remote areas faster

View from the sky also monitors poaching, floods and mosquito breeding sites



2019

2020

covid-19

2021

EXIT

2022

Mental Health

unicef | for every child

UNICEF

Brazilian scientists, UNICEF use technology to predict disease outbreaks after floods

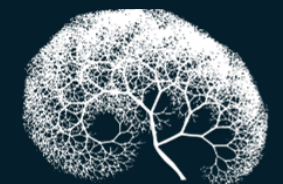


UCL

Helping track and reduce **COVID-19** in Northeast Brazil

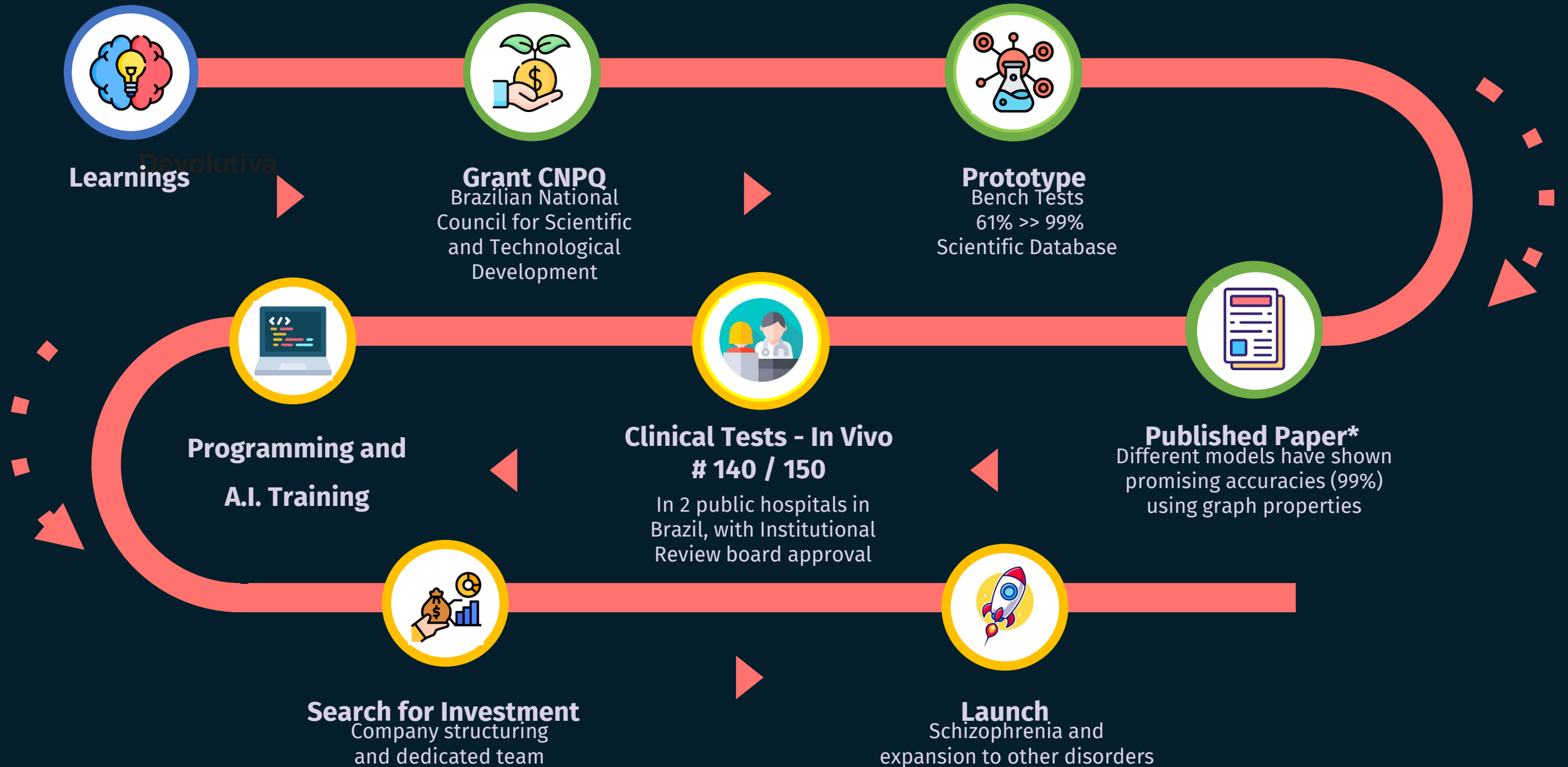
21 July 2020

Exclusivo: govtech Colab compra **Epitrack Health Tech**



ZophIA

# Roadmap



\* Paper: <https://www.medrxiv.org/content/10.1101/2024.04.05.24305390v1>

# Recent Achievements

Top 10 Most Innovative Startups 2023



Bertoleza, startup de estudantes de Medicina da UFPE, de pós-graduandos do iLika e de Matemática, está entre as dez finalistas brasileiras no Santander X Award Brasil

1st World Hackathon - Mental Health 2024



ZophIA.tech ganha o Harvard Health Systems Innovation Lab's Hackathon 2024 no HUB Brasil no InovaHC-USP



# ZophIA

## LET'S RESHAPE THE FUTURE OF MENTAL HEALTH !

Dani Pepe

Contato do WhatsApp



(11) 99925-8909  
dani@zophia.tech

[www.zophia.tech](http://www.zophia.tech)  
[www.linkedin.com/company/zophia-tech](https://www.linkedin.com/company/zophia-tech)



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