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Centro de Investigação
em Ciências da Informação,
Tecnologias e Arquitetura

Projeto FCT AIM Health

Aplicações Móveis Baseadas em Inteligência Artificial para Resposta de Saúde Pública

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https://istar.iscte-iul.pt/aimhealth-en/

FCT DSAIPA/AI/0122/2020 AIM Health

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Partnership

MPAI. community

MOVING PICTURE, AUDIO AND DATA CODING BY ARTIFICIAL INTELLIGENCE

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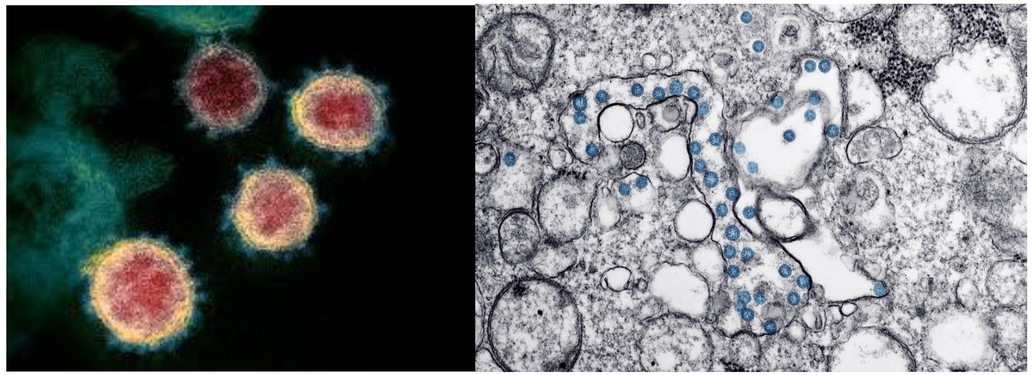
FCT AIM Health - Problem



1. How can we identify symptomatic and asymptomatic patients from biometric data

2. How can we forecast COVID 19 infection and advise to perform a test

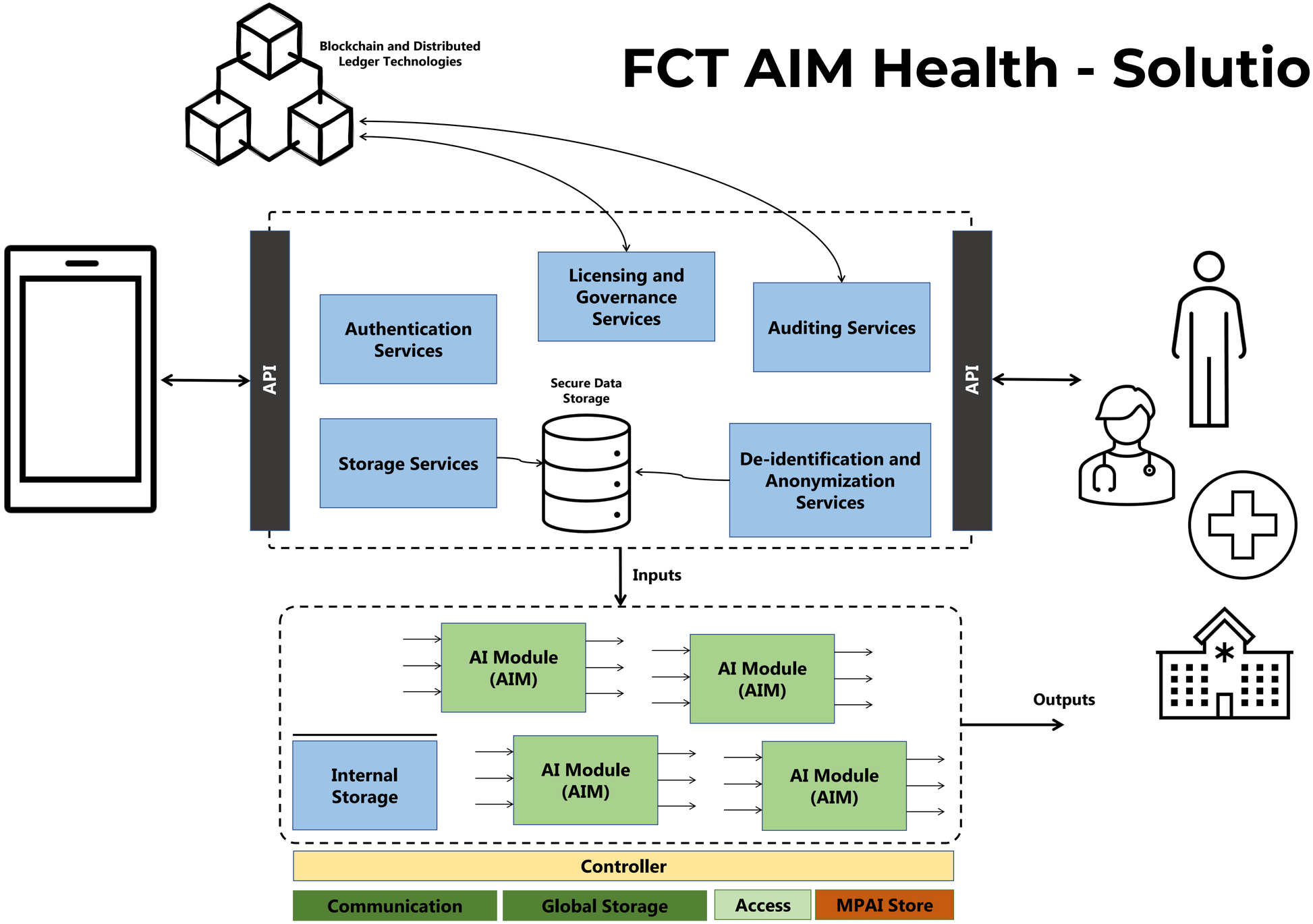
Cenario #1

COVID-19 patients in home care

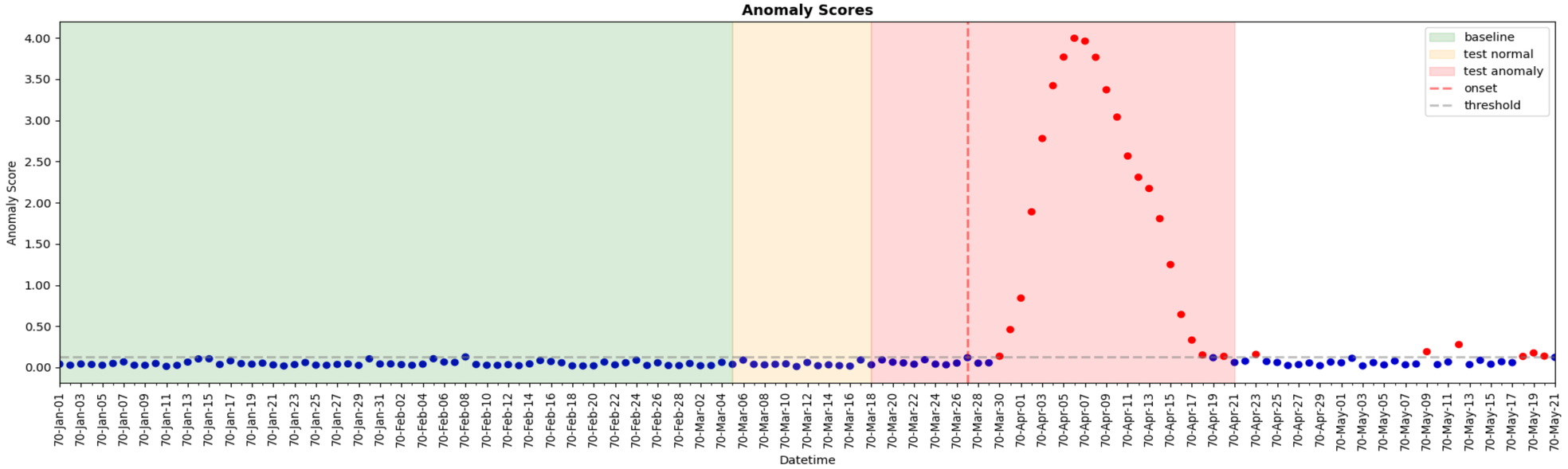
Cenario #2

Risk Groups, i.e. diabetic, hypertensive patients, with heart disease

FCT AIM Health - Solution



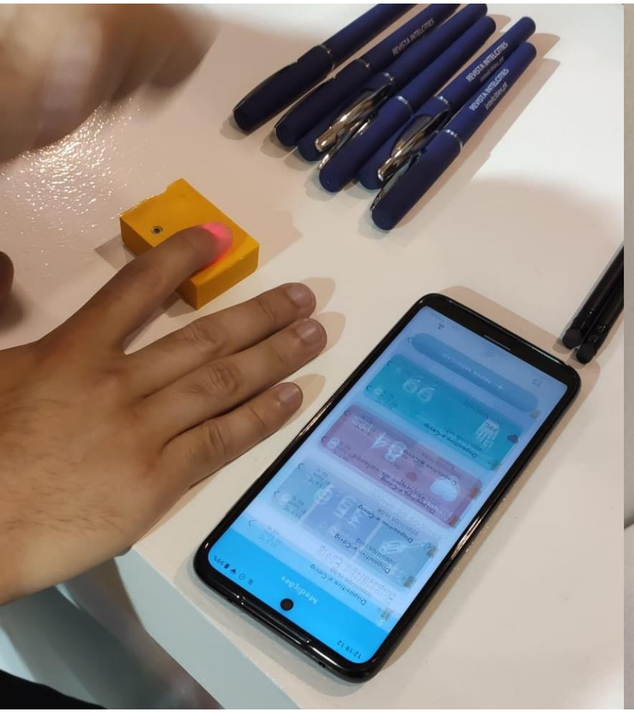
Preliminary Results

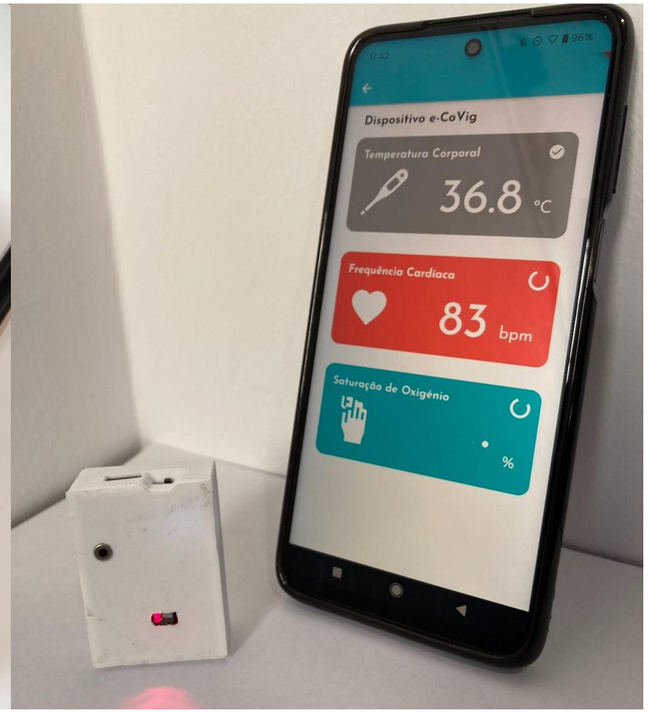


- **Standford dataset** 2000+ participants (steps and heart rate data)
  - 84 participants with COVID-19 (<1% covid-19 samples)
- LSTM Autoencoder
  - Balanced Accuracy: ~**58%** (mean of 84 balanced accuracies)
- Using **Contrastive Convolutional Autoencoder** (constrastive loss)
  - Balanced Accuracy: ~**79%**
- Modular framework for processing data

Mishra, Tejaswini, et al. "Pre-symptomatic detection of COVID-19 from smartwatch data." *Nature biomedical engineering* 4.12 (2020): 1208-1220.

Hassantabar, Shayan, et al. "Coviddeep: Sars-cov-2/covid-19 test based on wearable medical sensors and efficient neural networks." IEEE Transactions on Consumer Electronics 67.4 (2021): 244-256.





Data collection

- **Data collection app**
  - Temperature
  - Heart Rate
  - Blood Oxygen Saturation (Pulse Oximetry, Photoplethysmography – PPG)
  - Sound and Speech

- **Lisbon's Santa Maria's Hospital dataset**
- Data from patients in different departments and pathologies
- 01/01/2019 to 12/11/2021

- Non-wearable (but real-time) data
  - 23 122 patients
  - 62 GB of data

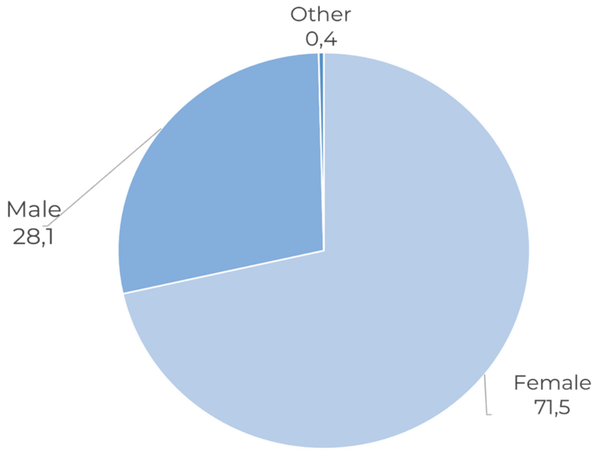
- Variables
  - Temperature
  - Heart Rate
  - Blood Oxygen Saturation
  - ....

The Effect of Persuasive Messages in the adoption of the AIMHealth app

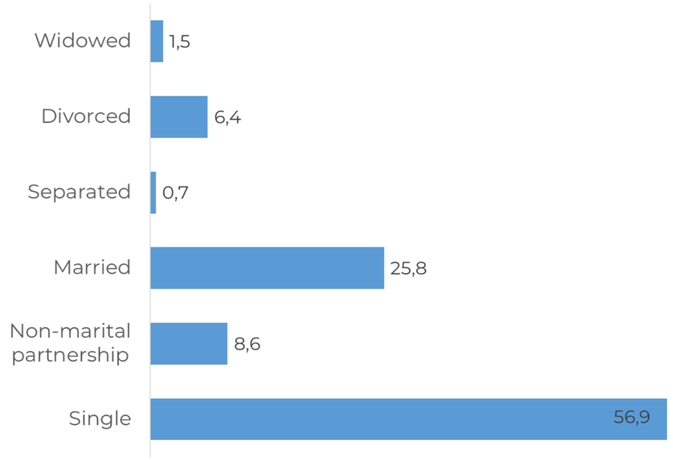
Participants (n = 267)

- **Age**
  - Mean = 34.9
  - Min = 18
  - Máx = 70
  - DP = 13.4

- **Sex (%)**



- **Marital Status (%)**



- Safety messages were found to have a better effect on individuals with a high perceived risk of COVID -19 than solidarity messages, in terms of both attitudes and intentions to use the AIMHealth app

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I want to thank you for your attention

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