

# DATA-DRIVEN HEALTHCARE FOR PEOPLE WITH PARKINSON'S

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*Encontro Ciência, Centro de Congressos de Lisboa*

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# WHAT IS LASIGE?

# LINES OF EXCELLENCE

- Accessibility and Ageing
- Cyber-physical Systems
- Data and Systems Intelligence
- Health and Biomedical Informatics
- Reliable Software Systems
- Resilient Distributed and Networked Systems



## Highlights

EC Invited expert for  
mobile accessibility

CHI Committee Chair for  
Accessibility & Aging

Best Paper Awards (CHI,  
ITS, MHCI, ASSETS)

H2020 projects and  
national collaborations

# OVERVIEW OF OUR WORK

Accessibility & Ageing

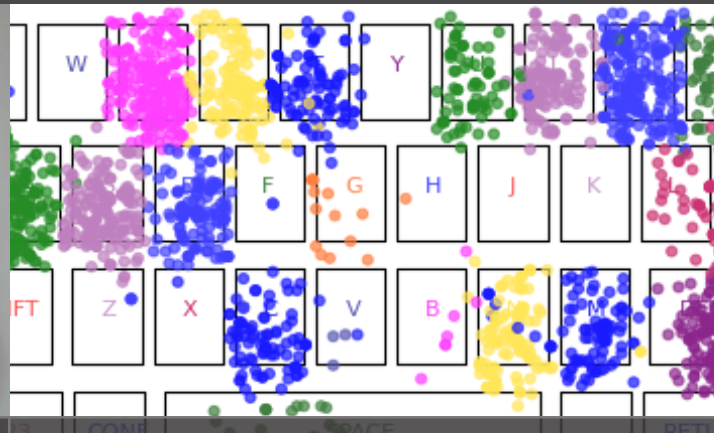
## HCI with a Purpose

We design, build, and evaluate interactive technologies that address high value social issues such as accessible computing, pervasive healthcare, public health, and usable privacy.

# EXAMPLE PROJECTS



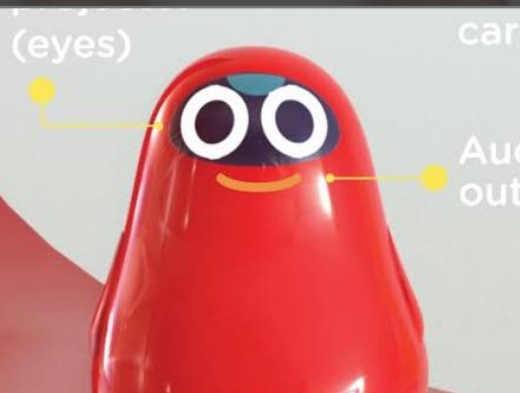
Braille I/O



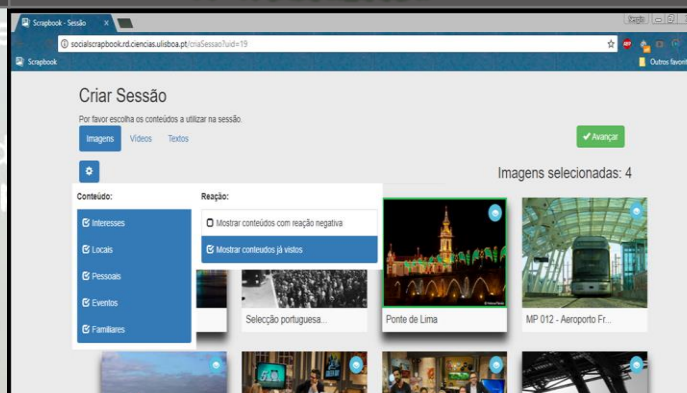
Touch modelling



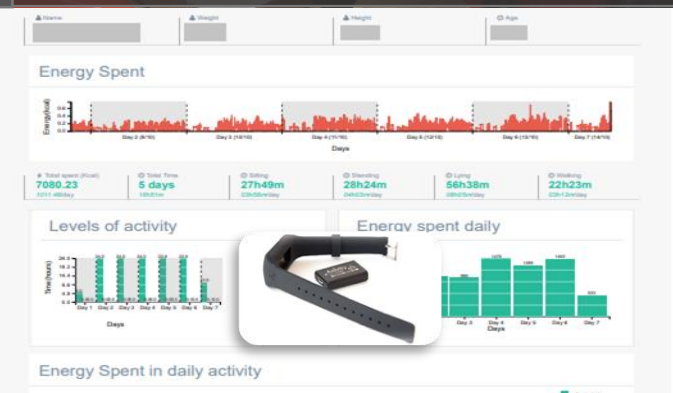
Blind People & Robots



Robots to Support  
People with Dementia



Novel approaches for Dementia  
Care and Intervention



Data-Driven Healthcare for  
Parkinson's Disease

# SOCIAL IMPACT





# USER RESEARCH

## We work with people

Expertise on user research methods

Spend time observing and collecting data  
just to support design choices

Go out of the computing box

Multidisciplinary team and variety of  
collaborations



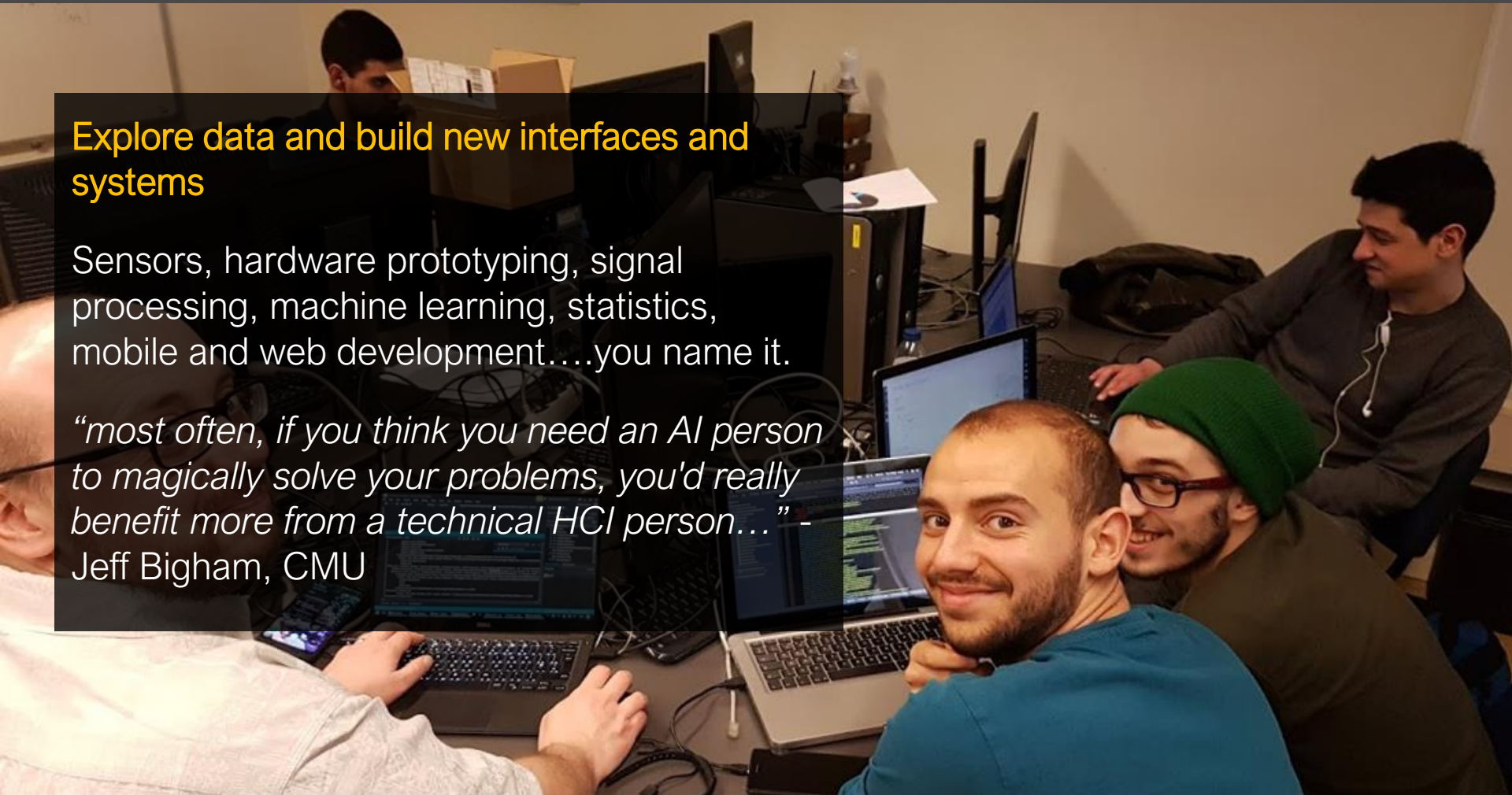


# BUILDING AND EVALUATING

## Explore data and build new interfaces and systems

Sensors, hardware prototyping, signal processing, machine learning, statistics, mobile and web development....you name it.

*“most often, if you think you need an AI person to magically solve your problems, you'd really benefit more from a technical HCI person...”* - Jeff Bigham, CMU



# ASSESSMENT IN PARKINSON'S TODAY

- Long-term degenerative disorder that mainly affects the motor system
- No cure but symptoms can be alleviated in early stages with medication
- Motor fluctuations during the day
- Changing response to medication

# ASSESSMENT TODAY



	ON	ON with dyskinesia	OFF	Asleep
<b>06:00-06:30</b>				X
06:30-07:00				X
<b>07:00-07:30</b>			X	
07:30-08:00			X	
<b>08:00-08:30</b>	X			
08:30-09:00	X			
<b>09:00-09:30</b>	X			
09:30-10:00	X			
<b>10:00-10:30</b>	X			
10:30-11:00			X	
<b>11:00-11:30</b>			X	
11:30-12:00			X	



# DATAPARK

Data-Driven Healthcare for Parkinson's

In collaboration with:

- Faculdade de Medicina da Universidade de Lisboa
- Campus Neurológico Sénior
- OpenLab, University of Newcastle
- Axivity

# ASSESSMENT IN THE CLINIC



**Ciências ULisboa**

Inicio sessão

or

Email

Password

LOG IN

Preparing..

March Assistant  
Bastao Nordico

Most Affected Side  
Unknown

AX3 Location

☒ Right Wrist  
☐ Left Wrist  
☒ Trunk  
☐ Left Foot  
☐ Right Foot

COMPLETE

Patient Search

Search Here

2 Bryan BA  
q2keq2@teste.teste

1 Eloise Fdx  
test\_email@panda.panda

3 No Patient  
teste@nopatient.test

Chosen Patient:  
Eloise Fdx  
1

LOGOUT NEXT

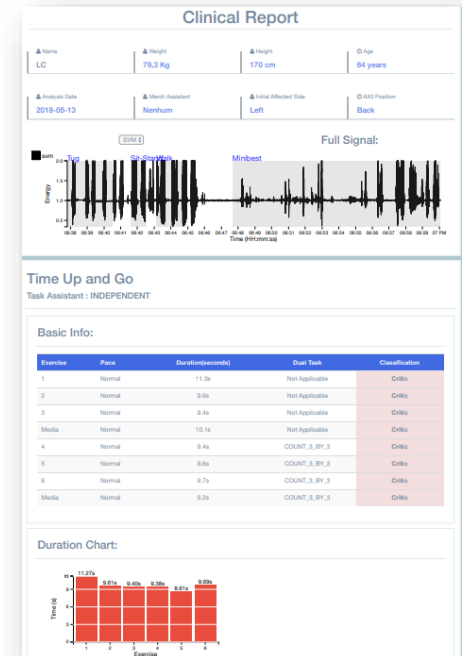
Sit To Stand

Normal\_Pace 0:10:327

Fast\_Pace

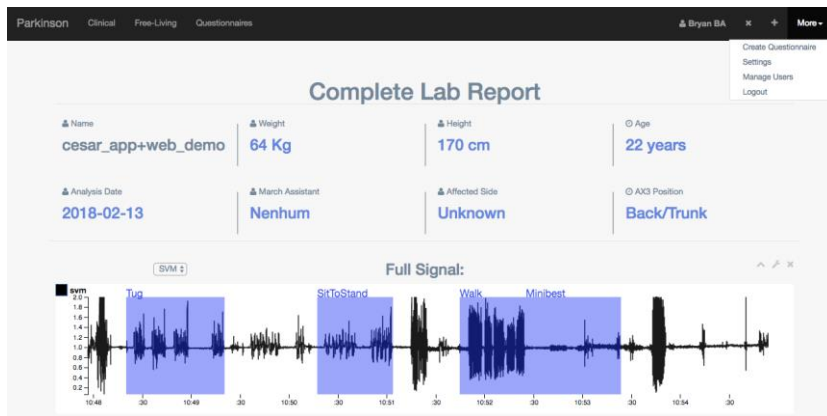
0:04:215

REPEAT STOP

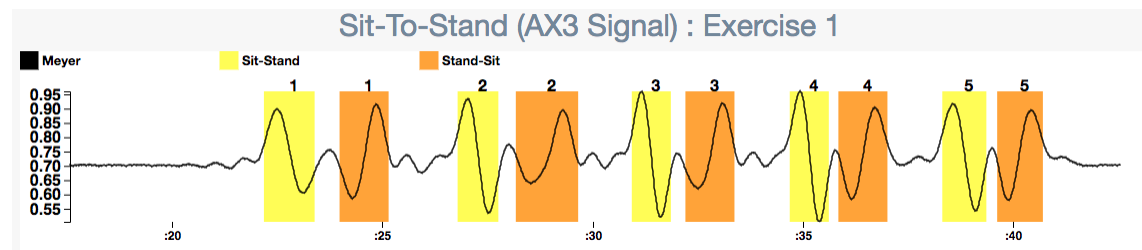




# ASSESSMENT IN THE CLINIC



1	Normal	6.5s	Not Applicable	Normal
2	Normal	8.5s	Not Applicable	Critic
3	Normal	8.6s	COUNT_BACKWARDS_3_BY_3_FROM_30	Critic
4	Normal	7.2s	COUNT_BACKWARDS_3_BY_3_FROM_30	Normal

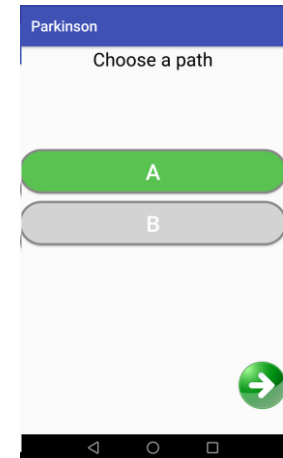
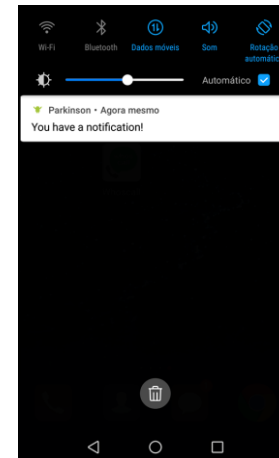
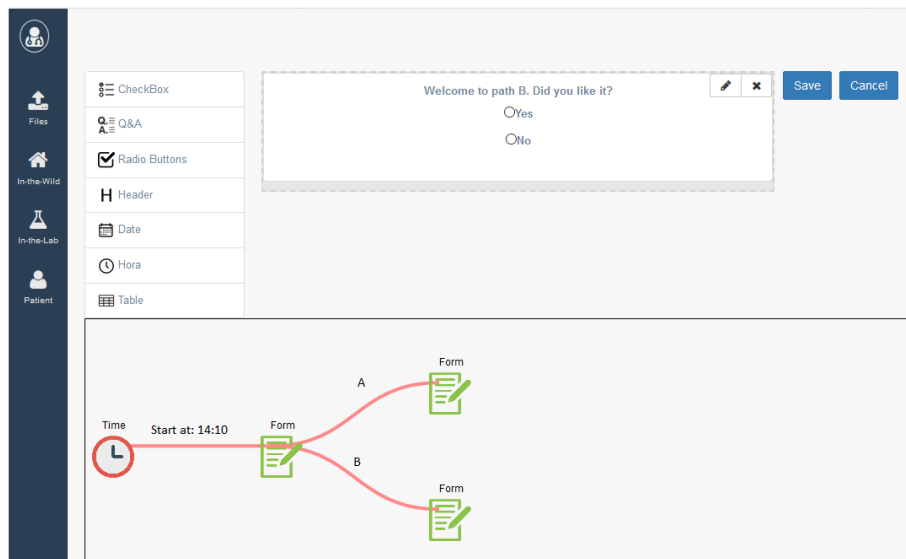


**LASIGE** driven by excellence

Sono



# Q&A AND ALERTS AT HOME



“Bom dia Sr. António. Se o dia estiver a correr bem diga 1 ou carregue na Tecla 1,...”

2

“A seguir ao beep, diga-nos então o que se passou”

- Currently deployed in a clinical setting
- Longitudinal evaluation
- Validation of novel algorithms for activity detection
- Free-living monitoring and intervention
  - e.g., detect FoG and deploy an audio intervention
  - e.g., detect low activity and deploy a custom questionnaire

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