

4ACEs Budapest Workshop  
20-21 January 2025

# Applications developed by LSA for speech related disorders



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# Research areas



Monitoring  
health state

Forensic  
speech

Emotion and  
intention  
recognition

# Monitoring healthy state

Parkinson's disease:

- neurodegenerative disorder
- incurable
- affects the elderly population after 50
- early detection is key

# Recording Parkinson's disease patients

## Speech:

- The North Wind and the Sun
- About 1 minute long

## Drawing:

- Archimedean spiral
- Less than a minute

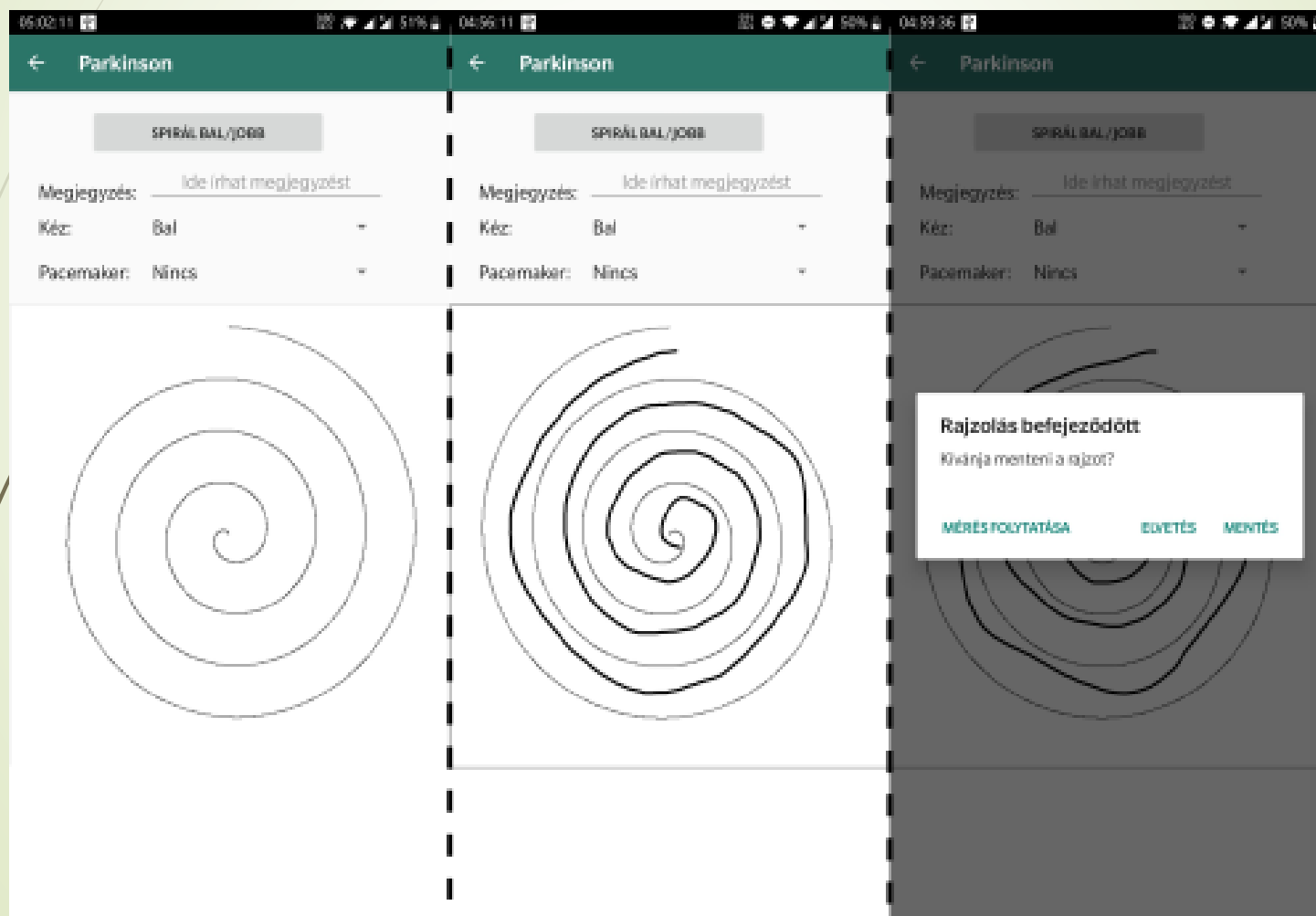
## Movements:

- 5 tasks from the Unified Parkinson's Disease Rating Scale (UPDRS)
- 1 minute per task per hand

# Recording Parkinson's disease patients



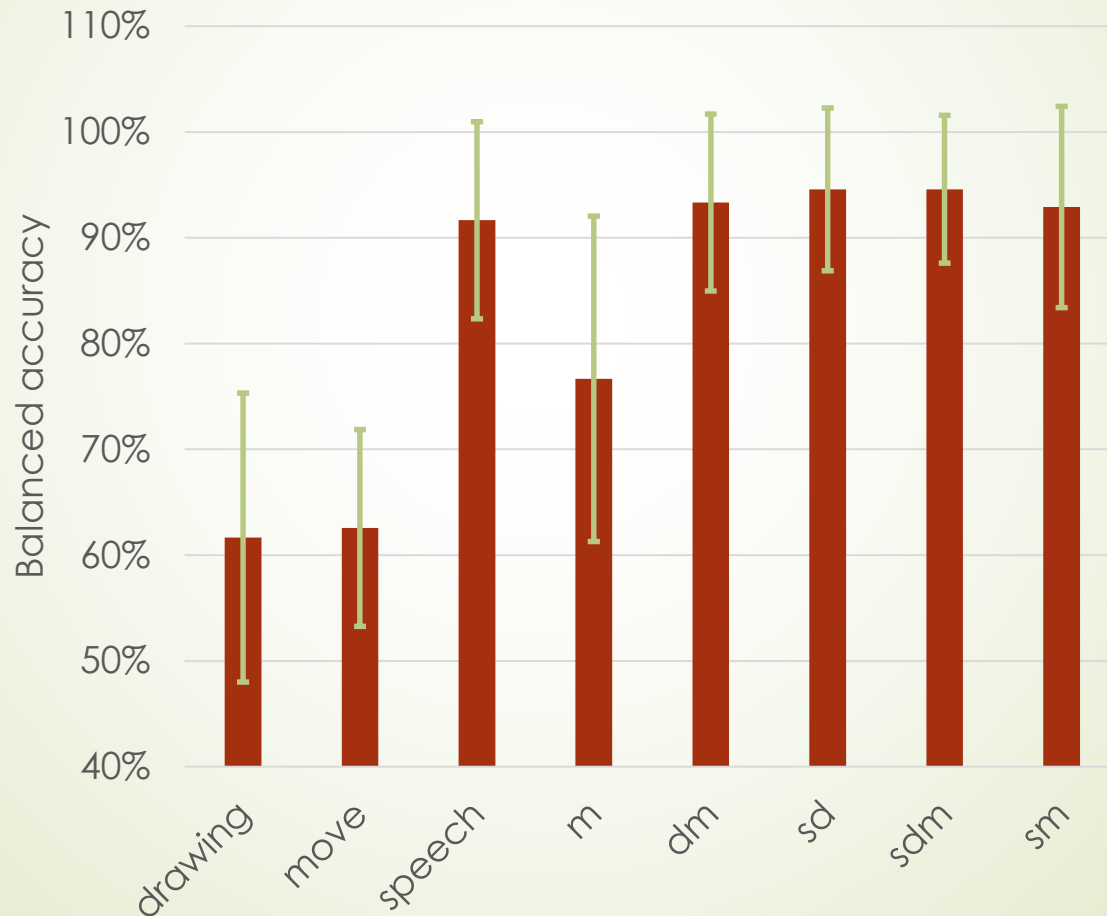
# Recording Parkinson's disease patients



# Multimodal dataset

classes	number of participants	age	UPDRS
PD	33	63.4 ( $\pm 14.9$ )	1.0
HC	47	56.7 ( $\pm 15.2$ )	-

# Results with the multimodal dataset



Results are submitted to the 3rd Workshop on Intelligent Infocommunication Networks, Systems and Services (WINS 2025)



# Monitoring healthy state

## Parkinson's disease:

- neurodegenerative disorder
- in curable
- affects the elderly population after 50
- early detection is key

## Depression:

- mental disorder
- first appears during one's late teens to mid-20s
- recognition is important

## Dysphonia:

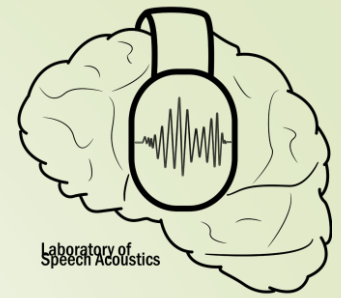
- voice disorder
- time and cost are considerably high
- cost-effectiveness and objective

# Application for primary screening

App demo

# Our lab





# Thank you for the attention!

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