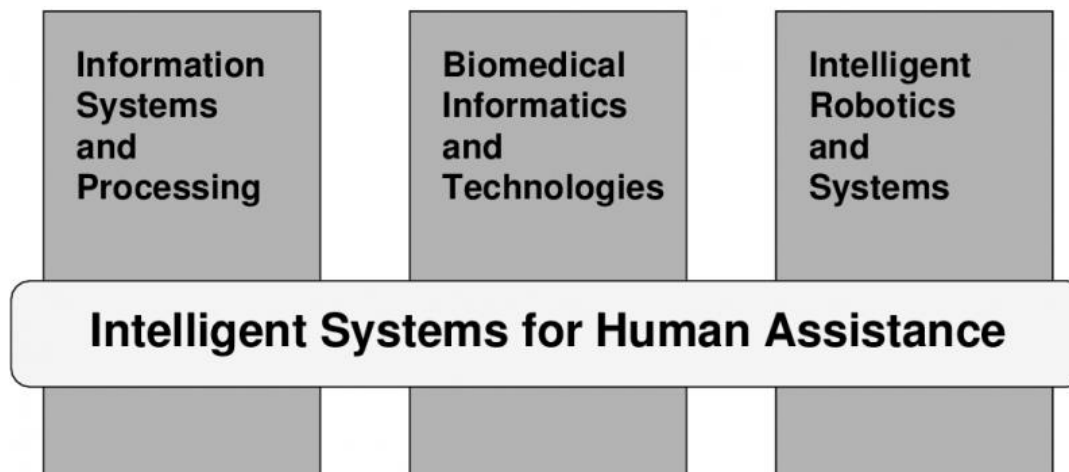




Communication Support for People with Aphasia in the Bedroom Scenario

Apoio à Comunicação para Pessoas com Afasia no Contexto do Quarto

Ana Patrícia Rocha, Afonso Guimarães, Luís Santana, Ilídio Oliveira, José Maria Fernandes, Miguel Oliveira e Silva, Samuel Silva, António Teixeira



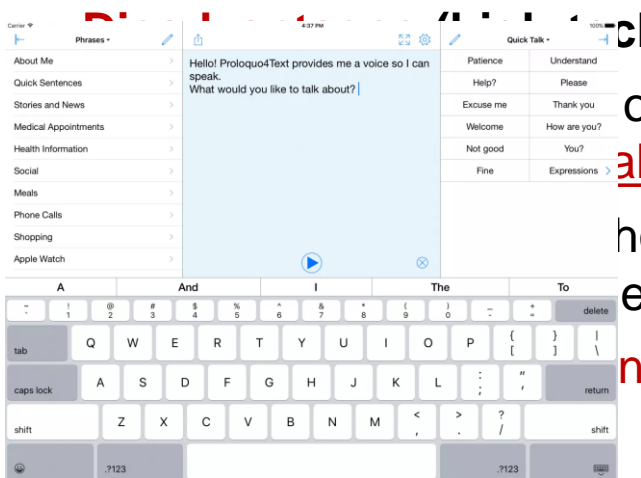
Motivation

What is Aphasia?

- Language disorder caused by damage in a specific area of the brain (e.g., as a result of stroke) that controls language expression and comprehension

Augmentative and Altern

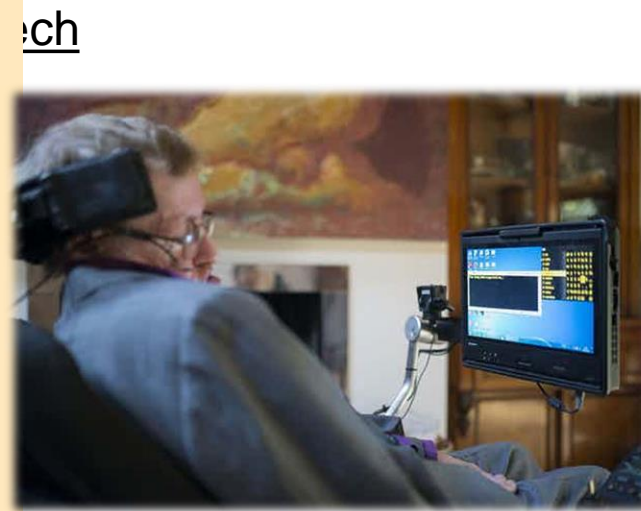
- Devices, systems, strategies



<https://www.assistiveware.com/learn-aac/what-is-aac>



<https://www.verywellmind.com/symptoms-of-aphasia-3146421>



<https://theconversation.com/the-technology-that-gave-stephen-hawking-a-voice-should-be-accessible-to-all-who-need-it-93418>



Context & Objective

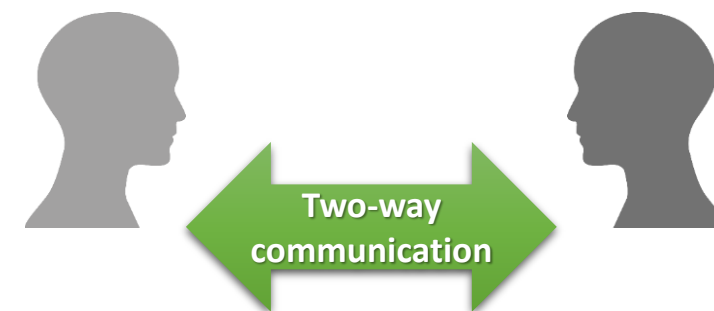
APH-ALARM - Comprehensive safety solution for people with Aphasia



- www.aph-alarm-project.com
- International AAL project (7 partners, 3 countries - Hungary, Portugal, Austria)
- Aims at:
 - Developing solutions for people w/ Aphasia that help them communicate with others, anywhere and anytime
 - Allow them to lead a **more independent and active life**

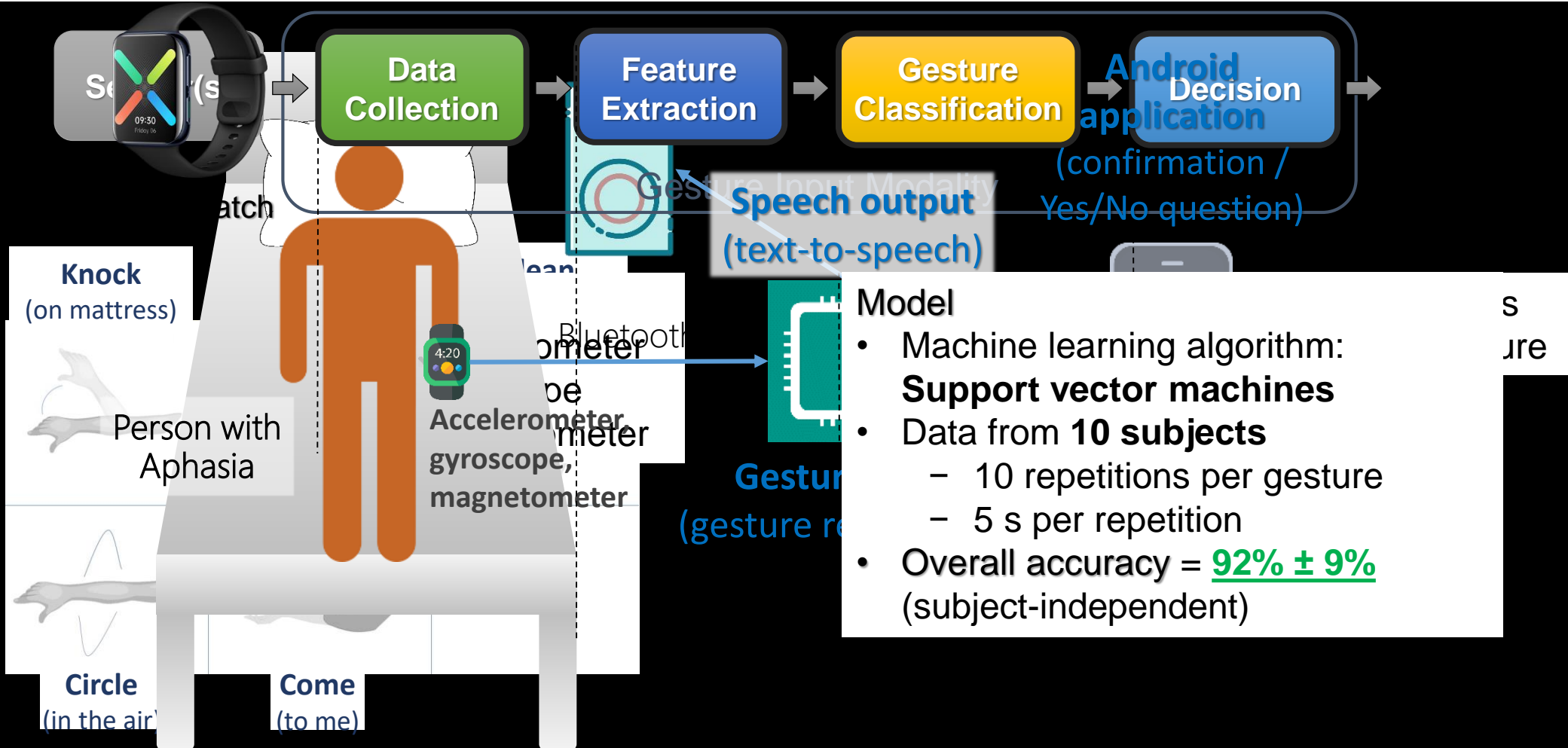
Objective

- Solution for the bedroom scenario (lying in bed)
 - **Person w/ Aphasia (PwA)**: Uses arm **gestures** to send a specific message to the caregiver
 - **Caregiver**: Receives message and sends confirmation/question
 - **PwA**: **Listens** to caregiver's message (speaker), and can reply using **gestures**





Communication Support System – First Prototype





Ongoing Work

S Communication Support System

- Add **local feedback (assistant)** + Improve **text-to-speech**
- Explore **redundant output modalities** for Aphasic user (e.g., graphics and/or text output)
- Improve **smartwatch-based gesture recognition** (e.g., different postures, ...)
- Explore **radar** for complementing/replacing smartwatch

<http://hdl.handle.net/10773/33877>

Gesture Recognition

- **Smartwatch**
 - Study w/ dataset corresponding to **10 subjects**
 - Evaluation of different machine learning algorithms, etc.
 - More data acquisitions from more subjects
- **Radar**
 - Data collection from several subjects → Evaluate subject-independent solution