

Privacy-Aware and Acceptable Video-Based Technologies and Services for Active and Assisted Living



Irene Ballester Campos

Al for Dementia Care

Education

2021 – now PhD Computer Science TU Wien, Austria *AI for Dementia Care*

About my PhD research

Computer Vision for Behaviour Analysis in Dementia

Problem Statement

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In dementia, behavioural changes .

Objectives

2017 – 2020

MSc Industrial Technologies Engineering University of Zaragoza, Spain

- Erasmus+ at University of Glasgow, UK
- Thesis: "Robust Visual SLAM in Dynamic Environments combining Deep Learning and Multiview Consistency"

2013 - 2017

BSc Industrial Technologies Engineering University of Zaragoza, Spain

- Erasmus+ at Politecnico di Milano, Italy
- Thesis: "Development of 3D Modelling Tools for the Evaluation of the Results of Breast Surgery"

Languages

Spanish, English (C1), Italian (C1), French (B2) and German (beginner)

- are strongly correlated with the degree of functional and cognitive impairment
- But privacy-preserving automatic measurement of dementia behaviours is still work-in-progress
- Development of methods for **behaviour measuring** for people with dementia from **depth maps**
- Comparison between input modalities
- Development of strategies to ensure robustness in real-world data

Human Behaviour Measurement from Depth Sequences

Input modalities

- Raw depth sequences
- Pose estimation
- Point clouds



Human Action Recognition for 4D Point Clouds



Professional Experience

2021 – now

Research Assistant

Computer Vision Lab, TU Wien, Austria

- Research stays at University of Toronto (2023) and University of Alicante (2022)
- Projects: visuAAL, DIANA and AlgoCare
- Supervision of MSc students

2019 – 2020

Working Master Student

Institut für Robotik und Mechatronik, German Aerospace Center (DLR), Munich, Germany

2018

Data Science Intern

INTEGRA Technology and Strategy, Zaragoza, Spain



Self-occlusions Complex, natural activities Unbalanced classes Frontal vs. tilted angles Sparsity

Applied Computer Vision and Human Computer Interaction for Dementia

ToiletHelp

ToiletHelp detects when the user needs assistance and provides step-by-step verbal and visual support

Methodology

- Automatic detection of need for assistance from depth maps
- Human-centered design for interaction
 - Focus groups with care staff





Let's connect!



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17 participants with dementia

Evaluation in real-world settings

Future Research Interests

- Computer vision for human behaviour understanding
- Robust deep learning and domain adaptation for real-world applications
- Interdisciplinary research, with a focus on health, care and social applications



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Universitat d'Alacant Universidad de Alicante

Project Coordinator







