

Florenc Demrozi

PhD Student

Speaker (*florenc.demrozi@univr.it*)

Computer Science Department
University of Verona - Italy



Personal Data

Surname

Demrozi

Firstname

Florenc

Telephone

(+39) 0458027048

Email

florenc.demrozi@univr.it

Nationality

Albanian

Date of Birth

27/05/1991

Affiliation

**Computer Science Department, University of Verona
Electronic System Design (ESD) Group**

Position

Second Year PhD Student

Advisor

Prof. Graziano Pravadelli

Key Research Areas

**Ambient Intelligence (Aml)
Ambient Assisted Living (AAL)
Machine Learning**

Personal Data

Surname

Demrozi

Firstname

Florenc

Telephone

(+39) 0458027048

Email

florenc.demrozi@univr.it

Nationality

Albanian

Date of Birth

27/05/1991

Affiliation

Computer Science Department, University of Verona
Electronic System Design (ESD) Group

Position

Second Year PhD Student

Advisor

Prof. Graziano Pravadelli

Key Research Areas

Ambient Intelligence (Aml)
Ambient Assisted Living (AAL)
Machine Learning



University of Verona
Computer Science
Department



Personal Data

Surname

Demrozi

Firstname

Florenc

Telephone

(+39) 0458027048

Email

florenc.demrozi@univr.it

Nationality

Albanian

Date of Birth

27/05/1991

Affiliation

Computer Science Department, University of Verona
Electronic System Design (ESD) Group

Position

Second Year PhD Student

Advisor

Prof. Graziano Pravadelli

Key Research Areas

Ambient Intelligence (Aml)
Ambient Assisted Living (AAL)
Machine Learning

Electronic Design System (ESD)



University of Verona Computer Science Department



Education

Surname

Demrozi

Firstname

Florenc

Telephone

(+39) 0458027048

Email

florenc.demrozi@univr.it

Elementary/Middle School

Mehmet Babamusta Kavaje (AL)

High School

Carlo Anti Villafranca di Verona (IT)

Bachelor Degree in Computer Science 2014

Graphical User Interface for TSL (Testbench Specification Language) , University of Verona
Supervisor Graziano Pravadelli

Master Degree Computer Science and Engineering 2016

Automatic generation of self-adaptive TLM protocols from PSL assertions
University of Verona
Supervisor Graziano Pravadelli



***University of Verona
Computer Science
Department***



Virtual Coaching for Assisting in Activities of Daily Life

Florenz Demrozi



florenz.demrozi@univr.it

PhD Student

Computer Science Department, University of Verona

Advisor: Graziano Privadelli



Abstract

In the context of Ambient Intelligence (AmI) the Ambient Assisted Living (AAL) has been emerging as a new research area, defined as the set of technological solutions designed to create and make the surrounding physical ambient active, intelligent and cooperative, able to sustain people independence, capable of providing more security, simplicity, well-being and satisfaction in carrying out Activities of Daily Life (ADL). In this context, this research activity aims to extend such environments potentially applying Machine Learning-based algorithms, concepts and ideas. In particular, the proposed methodology relies on defining smart environments based on hardware Sensors/Actuators and Intelligent Algorithms that ubiquitously and noninvasively interact with persons in ADL.

Introduction

Ageing of Population

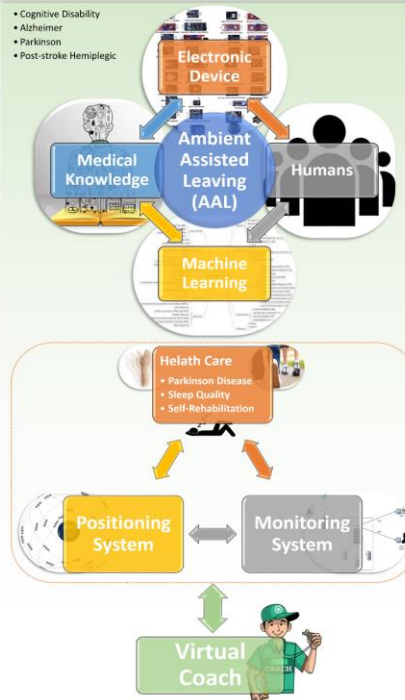
Nowadays population aging worldwide is rapidly accelerating from 461 million people aged over 65 years in 2004 to an estimated 2 billion people by 2050 [1], which has profound implications for the planning and delivery of health and social care. With this general development, more and more persons with intellectual disabilities reach the old age, eventually surviving to the parents and the other members of their family [1].

Ambient Assisted Living

defines a new branch of AmI that concerns the creation of smart environments able to help elderly and people with special needs during their normal life routine [4].

Studied Pathologies

- Cognitive Disability
- Alzheimer
- Parkinson
- Post-stroke Hemiplegic



Freezing of Gait (FoG)

- A brief episode during which patients find it impossible to generate effective forward stepping movements, in the absence of a cause other than parkinsonism or higher cortical deficits [2].
- Existing approaches [3]:
 - Monitoring of the Pathology
 - Detection of FoG context
 - Classification in FoG context and NO-FoG Context
- My Research:
 - Enrich Smart Environments
 - Detect FoG context (detect previous contexts)
 - Development of Coach System to detect the FoG context
 - Development of a Coaching System able to predict and consequently avoid the FoG context

FoG Classification based on Duration

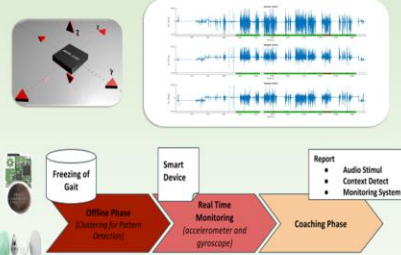
- <10s
- 10s<d-30s
- >30s

FoG Manifestation

- Trembling in place, with alternating rapid knees movement
- Shuffling forward, with very short, shuffling steps
- Complete (or total) akinesia, with no limbs and trunk movement

Overcome FoG

- Verbal/Auditory Stimuli (soldiers marching command)
- Visual Stimuli (e.g. line on ground, another's person walk)



References

1. Kinviella, Kevin G., and David R. Phillips. Global aging: The challenge of success. Vol. 60. No. 1. Washington, DC: Population Reference Bureau, 2005.
2. Snijders, Anke H., et al. "Physiology of freezing of gait." *Annals of neurology* (2016).
3. Del Din, Silvia, et al. "Free-living monitoring of Parkinson's disease: Lessons from the field." *Movement Disorders* 31.9 (2016): 1293-1313.
4. Dohr, Angelika, et al. "The internet of things for ambient assisted living." *Information Technology: New Generations (ITNG), 2010 Seventh International Conference on*. IEEE, 2010.

Take Home Message

Machine Learning-based algorithms applied to data generated from persons ADL are great tools to extend knowledge about features, evolution, and consequences of particular medical conditions. We must use that information for the benefit of such people, creating dedicated and non-invasive virtual coaching platforms.

Collaborations

Department of Neuroscience, Biomedicine and Movement Science, University of Verona

Contacts

Florenz Demrozi
Email: florenz.demrozi@univr.it
Phone Number: +39 045 802 7048
Skype: florenz91



University of Verona

Computer Science

Department

