

Dissertação de Mestrado em Engenharia Informática (2019/2020)

Title: Algorithms for the assessment of tremors for diagnostic support of neuro-degenerative diseases

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Summary

Neuro-degenerative diseases often include symptoms such as tremors, often seen in limb movement. Yet, these subtle movements may be invisible for the human eye and may vary from patient to patient, also varying with the time of the day. The precise measurement of the tremors can prove to be an important tool to support the diagnosis and the therapy for these diseases. Building on previous knowledge, this dissertation work will develop an algorithm (or set of algorithms) to measure and provide useful information to a physician on the state of that particular symptom.

Tasks

- T1 – Technological background study;
- T2 – Review the State-of-the-art;
- T3 – Requirements Analysis;
- T4 – Design and construction;
- T5 – Testing and evaluation;
- T6 – The writing of the dissertation.

Expected result

In this research work the following deliverables are expected:

- A validated computational tool;
- A publication describing the method and the validation results.

Timeline

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
T1	X	X	X						
T2		X	X	X					
T3			X	X					
T4				X	X	X			
T5						X	X	X	
T6					X	X	X	X	X

1. Ivan Miguel Pires, Nuno M. Garcia, Nuno Pombo, Francisco Flórez-Revuelta, Susanna Spinsante and Maria Canavarro Teixeira, "Identification of Activities of Daily Living through Data Fusion on Motion and Magnetic Sensors embedded on Mobile Devices," in Pervasive and Mobile Computing, Elsevier, May 2018.

2. Ivan Miguel Pires, Nuno M. Garcia, Nuno Pombo, Francisco Flórez-Revuelta and Natalia Rodríguez, "Validation Techniques for Sensor Data in Mobile Health Applications," in special issue on Integration of Sensors in Control and Automation Systems, Journal of Sensors, Hindawi, September 2016
3. Nuno M. Garcia, Paula Sousa, Miguel Castelo Branco; "Máquina de avaliação do estado de saúde através dos métodos conjuntos de auto-semelhança e entropia (Health status assessment machine through the joint application of self-similarity and entropy methods)"; Portuguese patent number 106023, status patent published, 2013.