Conferencia inaugural

Signal Processing and Modelling Approaches in Atrial Fibrillation

Dr. Luca Mainardi

Jueves, 30 de Noviembre, 10:30 (Auditorio Mitxelena)

Mainardi Luca is Professor at the Dipartimento di Elettronica, Informazione e Bioingegneria of the Politecnico di Milano, Italy, and Co-chair of the SPiNlabS Laboratory at Politecnico di Milano. His research activity is in the field of biomedical signal and image processing, and biomedical system modelling with applications to the cardiovascular system. He studies and develops methods for time-frequency analysis, recursive parametric identification and non-linear analysis of cardiovascular signals and series, with interest in the investigation of Atrial Fibrillation. He also studies advanced biomedical image processing techniques for features extraction, image registration and radiomics for oncology applications. He is author of more than 120 peer reviewed papers on international journals and more than 140 conference papers. He authored 12 book chapters and is editor of the book *Understanding Atrial Fibrillation: the signal processing contribute* published by Morgan & Claypool, USA.

He is member of the editorial board of the journal *Biomedical Engineering - Biomedizinische Technik* (deGruyter) and member of the international advisory board of the journal *Physiological Measurements* (IOPScience). Member of the directory board of the Italian National Group of Bioengineering (GNB) in the period 2004-2007, he is the elected chair of the International Medical Informatics Association (IMIA) WG7 on biomedical pattern recognition. He is also elected vice-chair of the EMBS technical committee on biomedical signal processing and member of the board of *Computing in Cardiology* (CinC) annual Conference. He is the coordinator of the EU Marie-Curie project *MY-ATRIA* under the H2020 program framework (GA-766082).

Abstract: Atrial Fibrillation (AF) is the most common sustained disorder of cardiac rhythm and is estimated to affect 1.5 %-2 % of the general population with a prevalence that increases with age, and reaches nearly 10 % in octogenarians. Considering the aging of population, the disease is reaching a pandemic proportion which stimulates the development of methodology and technologies for the investigation of AF events in large population both for screening purposes and for monitoring the efficiency of treatment/therapy. The talk will describe modern signal processing and modelling techniques applied to a variety of biosignals acquired in AF patients using both traditional devices (ECG and blood pressure measurements) and novel technologies (wristband devices or contactless measurements). A general overview will be given on the contributions of those methods in solving the challenging problems of AF patient screening and management.