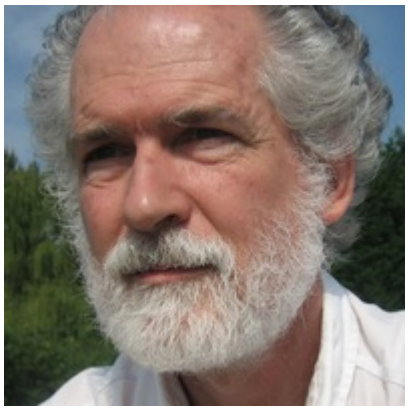
BIOMEDICAL ENGINEERING AND MEDICAL INFORMATICS CAN RESHAPE MEDICAL CARE

The cases of ABDOPRE to lower intra-abdominal pressure, MPETOM for electrical impedance tomography, DINABANG to monitor lower limb rehabilitation and SIMIC & SEPEPE as chronic condition and pregnancy follow-up systems as precursors of “mental ortesis”



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Politecnico di Torino - Maxwell Room

May 14, 2019 - 16:00

ABSTRACT

Sensors, actuators and digital control allow to respond to clinical needs in terms of diagnostic, therapeutic and prosthetic devices. ABDOPRE is a vacuum bell to modify intra-abdominal pressure for critical patients, in lieu of routine invasive decompression methods used today. IMPETOM is a bedside low cost tomographic equipment to display water and air content graphically based on 16 cutaneous electrodes. DINABANG displays force and torque in real time as the lower limb performs rehabilitation exercises under physical therapist control to avoid lesions or inefficient movements. “SIMIC-App” is prescribed by the physician to cardiac failure patients who need constant follow-up at home. Interaction with the patient is based on clinical guidelines and allows a first level of alerts at home. A second level involves alerts to the Health Care Team. SIMIC also has an Electronic Clinical Record System (ECR) where the App information since the previous visit is displayed, giving quality, meaningfulness and efficiency to the patient-physician relationship. SEPEPE is a similar system devoted to pregnancy follow-up. Medical Informatics has forced Medicine to adopt information capture and processing methods from office and production environments. PRAXIS (Informed ltd.) may change things as it is designed as a mental ortesis for the physician, build up by the accumulation of his treated cases and his professional decisions.

BIOGRAPHY

Franco Simini is Professor of Biomedical Engineering and Medical Informatics, Universidad de la República Oriental del Uruguay where he founded in 1985 the “Núcleo de Ingeniería Biomédica”, joint project of the Medical and Engineering Faculties. Co-designer in the 1980´s of the first stored program controlled Telex Switching Exchange for the national communications company ANTEL. Designer of pioneering Perinatal Information System (SIP) to record pregnancies and births in the Americas for PAHO/WHO since 1982. Active in Technology Transfer Simini has directed 130 students in Biomedical Engineering instrumentation and medical informatics projects and master´s theses, created 9 courses, holds medical applications patents and published two books. Founding co-Manager (2008-2013) of the“Espacio Interdisciplinario” to foster interdisciplinarity, IEEE Senior Member, Simini was Bioimpedance Congress CLABIO2015 chairman, and is presently organizing SABI 2020, biomedical engineering Congress in March 2020, as well as active in University government and outreach.

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