Science for Dialysis2: Artificial Intelligence and Machine Learning for achieving safety in Artificial Kidney

Friday 28th Sept 2018 · Hospital Universitari de Bellvitge

II Reunió de ciència i diàlisi: intel·ligència artificial

#BellvitgeDialysisAI

SESSION DESCRIPTION

Renal transplantation is the treatment of choice for Chronic Kidney Disease (CKD) patients, but the shortage of kidneys and disabling medical conditions make dialysis essential for most patients. Since dialysis drastically affects the patients' lifestyle there are great expectations in wearable ARTIFICIAL KIDNEYS but there are major concerns about their safety. On the other hand, dialysis patients with hemodynamic instability usually do not tolerate intermittent dialysis therapy because of their inability to adapt to a changing scenario of unforeseen events. Thus, for the development of novel wearable dialysis devices and the improvement of clinical tolerance will need of contributions from new branches of engineering such as ARTIFICIAL INTELLIGENCE (AI) and MACHINE LEARNING (ML) technology for real-time analysis of data from the monitoring of equipment alarms, dialysis parameters and real-time feedback response. With this aims, we propose to join us at this 2nd scientific meeting in Hospital of Bellvitge (L'Hospitalet, Barcelona, Spain). In this edition "work in progress" or "failed projects", concerning the use of AI and ML in medical applications are also welcomed in order to stimulate the debate and discussion.

OBJECTIVE

The objective of this meeting is to learn about proposals from the fields of AI and ML to address the current challenges to achieve smart dialysis machines.

Accreditation requested to the Catalan and Spanish Nephrology Associations (SCN and SEN)

CHAIRS

Miguel Hueso (Dialysis Unit. Nephrology Department. Hospital Universitari Bellvitge. L'Hospitalet de Llobregat), Alfredo Vellido (Intelligent Data Science and Artificial Intelligence (IDEAI) Research Center. Universitat Politècnica de Catalunya (UPC Barcelona Tech).

Supported by Palex and Nikkiso

TARGET AUDIENCE

Nephrologists and other physicians, physics, computing scientists, bioengineers, researchers, nurses, graduate students, renal patients and anyone interested in the topic.

INSCRIPTION

Free, but previous inscription to: rperez@bellvitgehospital.cat is necessary.

ABSTRACT SUMISSION

Send abstracts to: rperez@bellvitgehospital.cat

PLACE

Sala d'actes Gran de l'Hospital Universitari de Bellvitge.
C/. Feixa Llarga s/n
08907 L'Hospitalet de Llobregat.

LANGUAGE

English (without simultaneous translation).

PROGRAM

9:00 h. Opening.

9:15 h. Progress and challenges for the use of artificial kidneys. Miguel Hueso. Department of Nephrology Hospital Universitari Bellvitge and Bellvitge Research Institute (IDIBELL).

9:30 h. Challenges to the use of Machine Learning and Medical Decision support Systems (MDSS) in nephrology. Alfredo Vellido. Intelligent Data Science and Artificial Intelligence (IDEAI) Research Center. Universitat Politècnica de Catalunya (UPC BarcelonaTech).

10:00 h. Non invasive biosensors technology and their applications in Health Care: Role of optical sensors and nano-photonics. Valerio Pruneri/ Cedric Hurth. Optoelectronic Group. Institute of Photonic Science (ICFO).

10:30 h Coffe Breake.

11:00 h. Signals, sensors and m-Health data management: application to dialysis analysis and management. Vicent Ribas. Chair of Data Analytics in Medicine. e-Health group, Eurecat.

11:30 h. Artificial Neural Networks and Reinforcement Learning: Challenges for intelligent algorithms to improve biosecurity in dialysis? Anders Jonsson. Artificial Intelligence and Machine Learning Group. Departament de Tecnologies de la Informació I les Comunicacions. Universitat Pompeu Fabra (UPf).

12:00 h. Self-correcting abilities to improve accuracy of medical devices based on Biofeedbacks. Unique technology, Artificial Pancreas and Fully Automated Blood Glucose Controller. Suguru Mishina. Technical Product Manager for the Artificial Pancreas. NIKKISO.

12:30h. Individual response to dialysis treatment to improve dialysis dose accuracy. Carlo Barbieri. Fresenius Medical Care.

13:00 h. Ethics and social impact of AI and Artificial kidneys on dialysis patients. Antonio Tombas. President de la Associació de Malalts de Ronyó (ADER).

13:30 h. Round Table and Discussion.

14:00 h Lunch break.

15:00 h. Work in Progress: Posters session (in person and by videoconference).

16:00 h. Closing remarks.

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