IEEE Transactions on Industrial Informatics

CALL FOR PAPERS

for Special Section on

Patient Driven Data Acquisition for Next Generation Healthcare Industry

Theme: Smart phones have arrived in the middle of our society. There is now a vast knowledge base in the general public on how to interact with this technology. Patient led data acquisition aims to tap into that ocean of knowledge to deliver innovative healthcare solutions for the 21 st century. State of the art healthcare systems fail for diseases which evade the attention span of human experts. All serious non-commutable disease that cause public health problems develop over time. Currently these diseases are only correctly detected when symptoms appear within the human attention span. A diagnosis relies on a system of suspicion, a patient `feels' that something is wrong, objective tests,through physiological signals, medical imaging, or chemical tests, and subjective decision making when a medical expert fuses the objective test results with experience and knowledge. Patient led data acquisition will replace ambiguity and confusion during the detection of non-commutable diseases with objective knowledge. The beauty of that approach is that we start to incorporate the fact that humans evolve over time into the diagnosis process. The realisation of such a holistic healthcare strategy is withing the reach of modern technology and indeed it is tuned to the way in which society is developing. The communication infrastructure of the internet is omnipresent and access to that infrastructure is established through smart phone technology. With patient led data acquisition we use that infrastructure to communicate measurement data to a central location, such as a cloud server, for knowledge extraction and decision support. That knowledge discovery relies on a hybrid decision support platform where human experts and artificial intelligence algorithms work cooperatively on establishing a medical diagnosis. Challenges and indeed opportunities for big data healthcare through patient led data acquisition come from the following fields:

Artificial intelligence:
- o Improving the models over time. More data will lead to better disease detection.
- o Awareness of an individual patient. Track patient development and adjust medical decision support accordingly.

Internet of medical things:
- o Using available and novel infrastructure for medical data transmission from the home environment to a central location.

Data sources:
- o Wearable sensors.
- o Medical imaging and chemical tests in the home environment.

Ethical concerns:
- o Medical data acquisition in the home environment and communication of that data through the internet.
- o AI models tailored to individual patients.
- o Receding human involvement during the diagnosis process. It is predicted that the responsibility of the human expert will move from a position of active involvement in the signal analysis process to a supervisory role.

Manuscript Preparation and Submission

Follow the guidelines in "Information for Authors" in the IEEE Transactions on Industrial Informatics http://www.ieee-ies.org/pubs/transactions-on-industrial-informatics . Please submit your manuscript in electronic form through Manuscript Central web site: https://mc.manuscriptcentral.com/tii . On the submitting page #1 in popup menu of manuscript type, select: SS on **Patient Driven Data Acquisition for Next Generation Healthcare Industry**

Submissions to this Special Section must represent original material that has been neither submitted to, nor published in, any other journal. Regular manuscript length is 8 pages.

Note: The recommended papers for the section are subject to final approval by the Editor-in-Chief. Some papers may be published outside the special section, at the EIC discretion.

Timetable: Deadline for manuscript submissions **October 30, 2021**
Expected publication date (tentative) July 2022

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