

GET DIGITAL

– an online series on mHealth organised by the ECNP Digital Health Network

Digital approaches are fundamentally changing traditional ways of diagnosis, monitoring, management, and treatment worldwide. The Network of Digital Health offers monthly online presentations on mHealth related research.

How to attend: To receive link and password please send an email to network_digitalhealth@ifss.kit.edu including your name and affiliation.

Dates in 2023/2024:

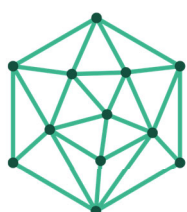
September 5th, 2023: Nicholas Cummins (King's College London, UK)
The potential of smartphones voice recordings to monitor depression severity (16:00-17:00 CEST)

October 3th, 2023: Richard Dobson (King's College London, UK)
Generating actionable, real-time insights from routinely collected, unstructured (e.g., letters, notes, reports) hospital data and patient generated data from mobile devices in the wild (16:00-17:00 CEST)

November 7th, 2023: Filippo Corponi (University of Edinburgh, UK)
Challenges and opportunities in personal sensing for mood disorders (16:00-17:00 CET)

December 5th, 2023: Nicholas Meyer (King's College London, UK)
Predicting relapse in psychosis using passive sensing: how close are we to the holy grail? (16:00-17:00 CET)

February 6th, 2024: Faith Matcham (University of Sussex, UK)
Digital Sensing in Major Depressive Disorder & Long-term engagement with remote measurement technologies, and early indicators of relapse prediction (16:00-17:00 CET)



Digital Health applied to the clinical research of brain disorders
ECNP Network

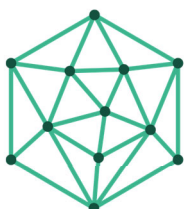
GET DIGITAL

September 5th, 2023: 16:00-17:00 CEST
Nicholas Cummins (King's College London, UK)

The potential of smartphones voice recordings to monitor depression severity



Speech is a unique and rich health signal: no other signal contains its singular combination of cognitive, neuromuscular and physiological information. However, its highly personal and complex nature also means that there are several significant challenges to overcome to build a reliable, useful and ethical tool suitable for widespread use in health research and clinical practice. With hundreds of participants and over 18 months of speech collection, the Remote Assessment of Disease and Relapse in Major Depressive Disorder (RADAR-MDD) study incorporates one of the largest longitudinal speech studies of its kind. It offers a unique opportunity in speech-health research, the investigation of throughout the entire data pipeline, from recording through to analysis, where gaps in our understanding remain. In this presentation, I will describe how our voice is a tacit communicator of our health, present initial speech analysis finding from RADAR-MDD and discussion future challenges in relation to the translation of speech analysis into clinic practice.



**Digital Health applied to the
clinical research of brain disorders**
ECNP Network

GET DIGITAL

October 3th, 2023 : 16:00-17:00 CEST

Richard Dobson (King's College London, UK)

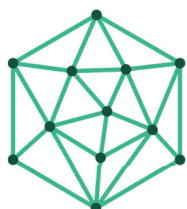


Generating actionable, real-time insights from routinely collected, unstructured hospital data and patient generated data from mobile devices in the wild

This talk will focus on (i) the huge potential of data collected within electronic health records as part of routine health care, most of which is in narrative and (ii) the opportunity to take advantage the ubiquitous use of always connected mobile devices such as smartphones and wearables.

Specifically, he will talk about CogStack, an open-source information retrieval and extraction system that harnesses the power of big data technologies. This platform efficiently processes and indexes large volumes of structured and unstructured clinical data, in near real time, transforming it into a treasure trove of insights. By leveraging Natural Language Processing (NLP) and more recently large language modeling approaches (Foresight MedGPT), CogStack extracts pertinent clinical information from a sea of text, unlocking the potential of electronic health records for understanding and diagnosing, and brain disorders.

He will then move to patient health monitoring with RADAR-base, a cutting-edge remote patient monitoring system. Utilizing wearable devices and mobile technology, RADAR-base collects and analyzes data reflecting patient's day-to-day activities and health states. From tracking sleep patterns to vital signs, this platform provides a comprehensive and continuous picture of patient health, bridging the gap between clinic visits and enabling personalized, patient-centered care.



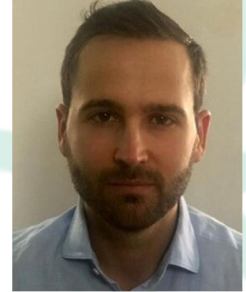
Digital Health applied to the clinical research of brain disorders

ECNP Network

GET DIGITAL

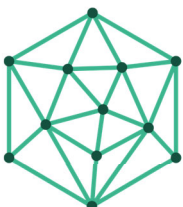
November 7th, 2023: 16:00-17:00 CET

Filippo Corponi (University of Edinburgh, UK)



Challenges and opportunities in personal sensing for mood disorders

Mood disorders (MDs) are among the leading causes of disease burden worldwide. Limited specialised care availability remains a major bottleneck thus hindering pre-emptive interventions. MDs manifest with changes in mood, sleep, and motor activity, which are observable in physiological recordings. Therefore, near-continuous and passive collection of physiological data from wearables in daily life, analysable with machine learning (ML), could mitigate this problem, bringing mood disorders monitoring outside the doctor's office. This approach, referred to as personal sensing, promises to transform the clinical practice. However, a number of challenges need to be overcome before such a potential can be unlocked. These include ML challenges, chief among which are the lack of strong ground truths in mental health, limited availability of annotated datasets, out-of-sample generalisation, and interpretability. In this talk I will present my experience and preliminary results from the Identifying digital biomarkers of illness activity and treatment response in Bipolar Disorder study.



**Digital Health applied to the
clinical research of brain disorders**

ECNP Network

GET DIGITAL

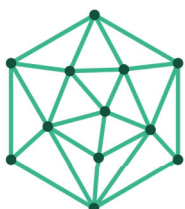
December 5th, 2023: 16:00-17:00 CET

Nicholas Meyer (King's College London, UK)



Predicting relapse in psychosis using passive sensing: how close are we to the holy grail?

Using passive signals from digital technologies to predict relapse in severe and enduring mental illness has been the focus of great interest. But how close are we to achieving this challenging goal? The Sleepsight study used wearable and smartphone technologies to capture passive data in individuals living with schizophrenia, over the course of a year. We explore the associations and predictive validity of these approaches for detecting deterioration and relapse.



**Digital Health applied to the
clinical research of brain disorders**

ECNP Network

GET DIGITAL

February 6th, 2024: 16:00 17:00 CET

Faith Matcham (University of Sussex, UK)

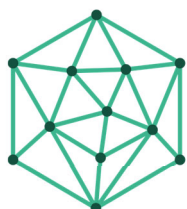


Digital Sensing in Major Depressive Disorder & Long-term engagement with remote measurement technologies, and early indicators of relapse prediction.

Remote Measurement Technologies such as wearable devices and smartphone sensors have potential to revolutionise the way in which we monitor chronic conditions. Providing high-frequency, objective information with minimal burden to the user, we can gather a rich understanding of daily variability in symptoms, contextualised against self-reported experiences.

The Remote Assessment of Disease and Relapse – Major Depressive Disorder (RADAR-MDD) was a longitudinal cohort study, aiming to examine the feasibility of long-term digital sensing in an MDD population, and use data collected via remote measurement technologies to identify early signs of relapse. The study recruited over 600 individuals with recurrent MDD from sites in London, Amsterdam and Barcelona, and asked participants to wear a FitBit, answer app-delivered questionnaires, and provide passively-collected smartphone sensor data for a median follow-up time of 18 months. The resulting dataset is the largest multiparametric digital dataset in a clinical population in the world.

This lecture will share some of the key learnings from this international research project. We will discuss the feasibility and acceptability of large-scale passive and active data collection in people with recurrent MDD and examine the predictors of long-term engagement with remote monitoring. Some of the latest findings from our analyses, examining longitudinal predictors of depression severity and relapse will be presented alongside some of the critical implications for clinical implementation.



Digital Health applied to the clinical research of brain disorders

ECNP Network