connected everything.

Studying mental stress factors in occupational safety in the context of smart factory and COVID-19

Project Team:

Nottingham Trent University


Azfar Khalid (Robotics)


Philip Breedon (Medical Design, Robotics)


Ahmet Omurtag (Neuroimaging)


Zohreh Zakeri (Biomedical Imaging)

PEPSICO International


Greg Hilliard (Engineering Innovation Group)


Ahmed Khan

Contact

Azfar Khalid
Nottingham Trent University
azfar.khalid@ntu.ac.uk

in partnership with

PEPSICO

The project team and timeframe

The feasibility study team comprises of Dr. Azfar Khalid (Principal), Prof. Philip Breedon (Co), Dr. Ahmet Omurtag (Co) and Dr. Zohreh Zakeri, investigators from the Nottingham Trent University, working in partnership with the Engineering Innovation Group, PepsiCo Europe, based in Leicester. The project is expected to begin in September 2020 and to be completed by September 2021.

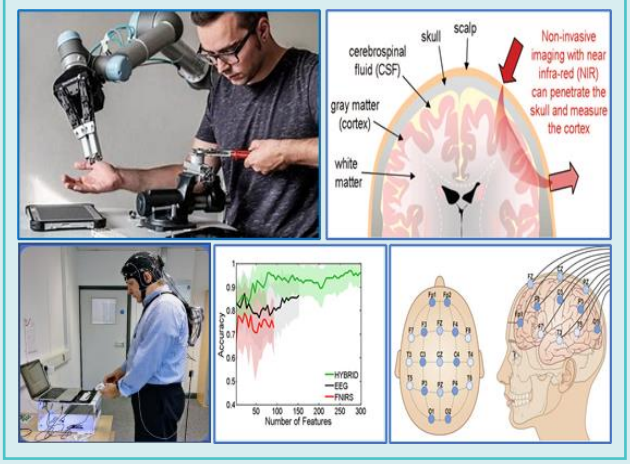
What will the project investigate and deliver?

The use of collaborative robots (COBOTs) in the industrial setting has grown and continues to grow globally, especially in the context of the smart factory. Humans and COBOTs are ever increasingly expected to share their workspace and associated issues related to workplace health and safety are expected to rise. This research study seeks to further understand the impact on the workers mental health (as measured by mental stress) in relation to the task variables (complexity, time constraints, production speed, duration, etc) whilst working alongside the cobot. The acquired patterns will be used to formulate regulatory framework for the design of collaborative space in the industrial manufacturing systems and to support in advancement of International Standard on collaborative robotics.

Stress measurement

Non-invasive neuroimaging data acquisition and processing will enable us to find the correlations of mental stress with respect to variations in work environment conditions. Mental states often correlate with the brain's alpha rhythms and changes in haemoglobin concentrations and are observable only by a multimodal technique such as EEG+fNIRS. These patterns are responsible for increasing the information content of the measured signals and increase the accuracy of the decoding of mental states.

Wearable EEG & fNIRS



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