2020 Wearable Technologies Workshop Challenge Request

Challenge Title: Health monitoring through brain-computer interfaces

Organization Name: BP

Team Assignments Available: 5

Summary of the Challenge and Team Project

Background:

The Technology group in BP seeks different ways that technology can improve our oil and gas operations. We are currently exploring the application of various wearable devices to capture different types of data within a facility: acoustic sensors, infrared cameras, etc. A key challenge in our operations is continuous health monitoring to improve the safety of our workers in the field.

Problem statement:

We would like to develop a wearable device that can monitor the "rhythms of concentration" of an individual through collected data and decide (using AI) when it is time to take a break by detecting, for example, high stress or low concentration levels.

Important design considerations (These can be discussed, and possibly negotiated, in more detail after the Team has been assigned):

- What type of wearable device to use for collecting the data? The team will need to consider that this will be worn continuously by individuals working on our facilities
- How will the data be collected, transmitted, interpreted, and stored?

What funding and/or resources can be provided to each Team? (The details of the payment arrangements must be negotiated with the Team.)

We can provide some financial support for the materials required to develop the wearable (if not already developed) as well as mentoring throughout the project.

Deliverables (the final product you expect the Team to provide – such as a report, garment, user evaluation, …):

- The wearable device and algorithms that interpret the data (hardware and software)
- A final report documenting the design and development process as well as results of testing

How will the results be used?

The results of this project will provide benefit to BP in our investigations of how wearables can be implemented in our operations. Improving safety is a top concern, so a wearable device that can work in this manner would be very beneficial to BP.

What deliverables (if any) do you want transferred to you at the end of the project?

BP would like unrestricted access to the developed prototype for possible additional development or usage in a field trial on one of our facilities.