Optics and Photonics Group Lunchtime Seminar
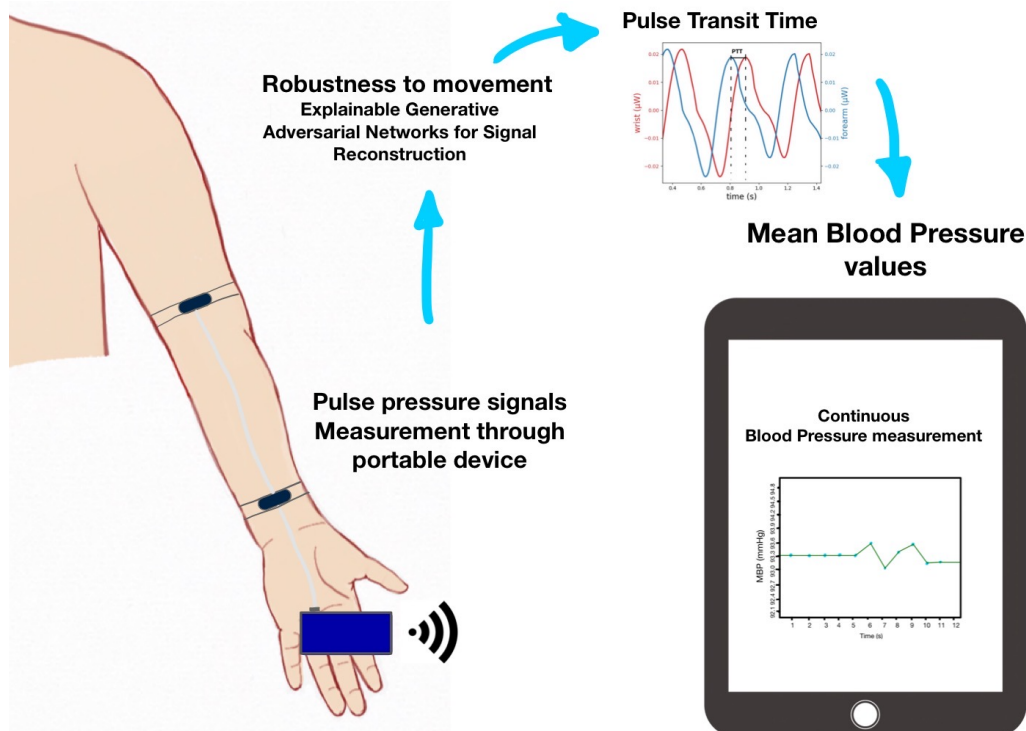
"Continuous ambulatory blood pressure monitor using optical fibre sensors and Machine Learning models"

Itzel Alexia Avila Castro

Optics and Photonics Group

13:30 Wednesday 29 March 2023
Coates Building - C24
All Welcome

Add to Calendar

http: //optics.eee.nottingham.ac.uk/wiki/Seminars_2022-2023

"Continuous ambulatory blood pressure monitor using optical fibre sensors and Machine Learning models"

Itzel Alexia Avila Castro

13:30 Wednesday 29 March 2023

Coates Building - C24

All Welcome

MS Teams link

Hypertension or high blood pressure affects more than one-quarter of adults in England. This condition is the major risk factor for stroke and heart failure. At the same time, in newborns it is extremely important to detect blood pressure variations within the first week of life to reduce the risk of a heart haemorrhage.

The standard techniques for blood pressure (BP) measurements face several difficulties to address this problem since the continuous measurement of BP requires an invasive procedure by arterial catheterisation. On the other hand, non-invasive methods do not provide a continuous reading. Lately, conventional Deep learning models have been used to predict continuous BP values; however, these models still require massive datasets, computer resources and lack of interpretability.

Therefore, an early and continuous ambulatory monitoring device for blood pressure is proposed in this project. This project seeks to continuously monitor blood pressure to reduce the risk of irreversible disease persistence. With the incorporation of the latest advances in optoelectronics and material processing with source/detector optimisation, along with explainable Machine Learning algorithms it is possible to obtain an accurate and timely measurement.