**Background:**

Nowadays, sensors can be seen in many devices such as smartphones, automobiles, and industrial instruments. Also, sensor information plays a critical role in a wide range of industries from health to safety. This information usually comes in a time-series format can be helpful in different fields such as disaster prevention [1], human health alerts, and air quality control by measurement interpretation. Some sensor information may contain noise (usually environmentally). We can find patterns by classifying the sensor information. The most common challenging issues of classification application are when we face imbalanced data and lack of training data. [1] For example, if you consider a time series data set containing vibration data of a bridge, we will face a lack of earthquake information while it is a rare phenomenon. [1] In several related works, CNN (Convolutional Neural Network) and LSTM (Long Short Term Memory network) have succeeded in time-series classification problems.[2]

**Goals:**

* Classifying current sensor information by the following deep learning architectures:
  + CNN
  + FCN (Fully Convolutional Neural Network)
  + LSTM
* Make reproducible Python code accessible in the following GitHub repository:

[devagent42/ITEC5902-Project](https://github.com/devagent42/ITEC5902-Project)

* Prepare a 4-page report in IEEE format including Introduction, literature review, Problem statement, proposed solution, results, and conclusion

# References

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| [1] | A. Shrestha and . J. Dang, "Deep Learning-Based Real-Time Auto Classification of Smartphone Measured Bridge Vibration Data," 2020. |
| [2] | D. P. Francis, M. Laustsen and H. Babamoradi, "Classification of colorimetric sensor data using time series," 2021. |