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Uncertainty quantification for machine learning models applied to photoplethysmography signals

Wearable devices that collect photoplethysmography (PPG) signals are:
- Noninvasive and cheap
- Easy to use
- Used in a clinical setting
- Popular in smartwatches

PPG signals can be used for:
- Continuous monitoring
- Remote monitoring
- Diagnosis of disease
- Health alerts

Uncertainty quantification:
- Provides an indication of the confidence in the machine learning prediction
- Helps to establish trust in the machine learning results

Project Aims

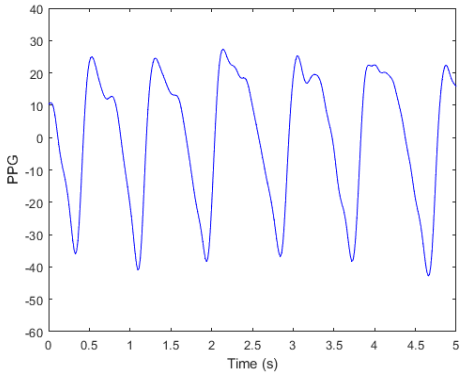
- Investigate performance of machine learning algorithms for PPG signals that could be used for **diagnosis of diseases** or **continuous health monitoring**
- Increase trust in machine learning predictions by defining **uncertainty quantification measures**
- Compile **benchmark datasets** to compare machine learning methods and uncertainty measures
- Improve reproducibility and reliability of machine learning with open **software repository and guide** on uncertainty quantification
- Encourage **feedback and uptake** of benchmarks and testing framework by medical device, digital and healthcare communities

"It is critical for clinical decision-making to be able to understand the level of confidence that we can have in pulse oximeter measurements"

Timothy Bonnici, Consultant Critical Care Physician

"The application of machine learning to PPG signals could help rapidly scale up the use of virtual wards, reduce the burden on clinicians, and improve patient care at home"

Craig Shenton, Senior Data Engineer



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