Challenge 2: Audio-phenotyping of patients using mobile-phone recordings

Background: Eupnoos are an audio-phenotyping company that use cloud-based software architecture to enable remote monitoring of lung function via a mobile app (https://www.eupnoos.com/). The data can then be sent to clinical practitioners to enable decision making across health care interfaces. Using this software, patients can upload audio recordings they have taken on their mobile phone of them undertaking a particular breathing manoeuvre for analysis. The goal is to democratise the availability of lung function diagnostic testing and thus address health inequalities and disparities by making use of the ubiquity of smartphone technology.

The problem: Eupnoos is using spectral analysis to identify features from the data that exhibit statistical associations with lung function. The challenge is to develop feature agnostic methods to measure and validate lung function using this spectral audio data.

Data available: Audio recordings of forced expirations taken via mobile phone coupled with ground truth gold standard spirometric data.

Relevant expertise: This challenge will be particularly relevant to those with expertise in data science/statistical modelling/machine learning and working with audio data as well as requiring insights regarding airway mechanics and lung function measurement.