# **Ventilator Pressure Prediction**

## Importing Libraries

Firstly necessary libraries are imported.

## Uploading Dataset

* Then read the train and test csv files in python notebook with the help of pandas libraries.
* My Target variable is Pressure.
* Then showed dataset overview for both train and test dataset like – Dataset info, descriptive statistics, feature correlation.

## EDA

* In EDA part I first plotted Correlogram between features to show autocorrelation coefficients between each features.
* Then I plotted hist plot for all the feature of training dataset.
* Then I created a DataFrame, df\_breath which is grouped by median value of breath\_id.
* Then I plotted histogram for the columns - 'time\_step', 'u\_in', 'pressure' of dataframe df\_breath.
* Then I showed few sample of data where pressures are low, below 0 and high.

## Modelling

* In Modelling part, I have defined some additional features and added to the training data.
* Then defined X variable and Target variable in the training dataset.
* Then split the training data in train and validation set.
* Then I used .fit method to fit linear regression model and decision tree to trained X and y variable.
* I defined a function to create plot for given input.
* Then I defined a function name process\_visualisation\_with\_preds where four plots –
* time steps vs pressure
* time steps vs u\_in
* time steps vs u\_out
* time steps vs predicted pressure

are plotted in a same graph.

* Finally I checked my prediction quality with our process visualisation.

It shows out of linear model and decision tree whose pressure prediction is more appropriate for three different stages of pressure (below 0 ,normal and high).

* For all three pressure stage pressure prediction by decision tree was more accurate than linear model pressure prediction.
* Lastly I calculated Mean Squared Error (MAE) for both the model and MAE is minimum for decision tree model.