Deep neural model:

* Objective: To predict whether the phone is in use or not.
* Obstacles:
  + On device model deployment requires:
    - Smaller model size
    - Less computation
    - Layer compatibility
  + Type of neural model:
    - Time series model
    - Regression model
    - Classification model
  + Data gathering:
    - Selection of parameters
    - Cleaning up the data
  + Development of neural model dependent on the above parameters
* Solutions:
  + As the model size is supposed to be small and should do simpler computation without compromising on the result accuracy, so complex model architectures’ can’t be implemented.
    - As they would be slow
    - And layer compatibility might be an issue
    - Also heavy models not necessarily perform better in all cases
  + Native model construction allows one with the freedom to customize the model for variety of use cases.
  + Based on data size and use cases certain hyperparameters are to be twitched every now and then for better results.
  + Model type selection is based completely on use case.
  + The flow of nudges demands us to predict whether the user is currently using his/her phone. So this becomes a classification problem.  
    A time series model is like a regression model that would predict either at what time next the individual would use the phone or whether at a time instant in future would the user be using the phone.
  + Basis on the discussion as it is a classification problem so the model architecture is built accordingly.
  + Once the model architecture is decided based on the data type being fed we choose what layers to choose (which mathematical equation to execute):
    - If images as input then use CNN
    - If time series then use LSTM
    - If classification then ANN
  + Data gathering is highly dependent on the IOS permissions to access data.
  + Of the available data we gather all the necessary data and then process the data in the format that is needed to be fed to the model.
  + As all deep learning models need numbers as input so:
    - Encoding for strings
    - Normalization
    - Above mentioned tasks are necessary.