Instructions

Run the following code to generate 5000 samples of time series signal.

```
import torch
import copy
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
from matplotlib import style
style.use('dark_background')
from sklearn.model_selection import train_test_split
from torch import nn, optim
import torch.nn.functional as F
from scipy import signal as sg

T = 100
N = 5000
x = np.linspace(0, 1, T)
data = np.zeros((N, T))

for i in range(N):
   w = np.random.rand()
   data[i,:] = sg.sawtooth(2 * np.pi * 5 * x, width = w)
```

Design an LSTM based Autoencoder that can regenerate the original signal after training.