LSTM (ctns)

DSC 180B - Group 3 - Week 6

Feature Engineering

- 1). [sin(hr), one-hot encoding the week day]
  - [0.131, 0. , 0. , 0. , 0. , 0. , 1.] # Sunday, 12am

- 2). [lookback(time_step)]
  - [3354, 3560, 3545] # lookback = 3
  - [1000, 3600, 3600, 3500, 3354] # lookback = 5
    - Time used in seconds per hour

“Vanilla LSTM”

- Model:
  - 1 hidden layer, 1 output layer
  - Sequentially: 1 LSTM, 1 Dense

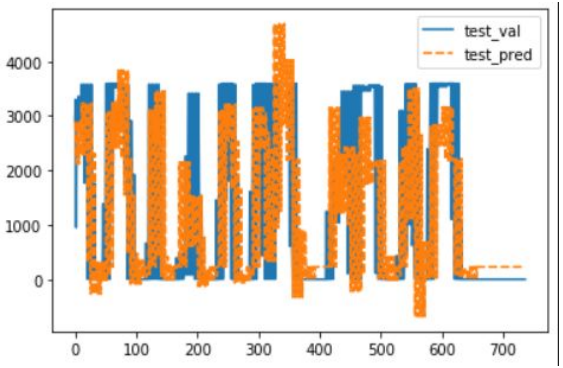
“Stacked LSTM”

- Model:
  - Multiple hidden layers are stacked on top of each other
  - Sequentially: 2 LSTM, then 1 Dense

Evaluation

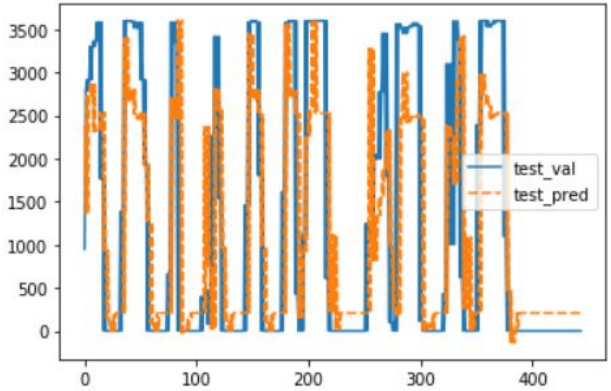
- **On** 20% test data
- **RSME**
  - np.sqrt(*sklearn.metrics.mean_squared_error*)
- **Accuracy**:
  - Preds == True if within *3 mins* of the real values

Results



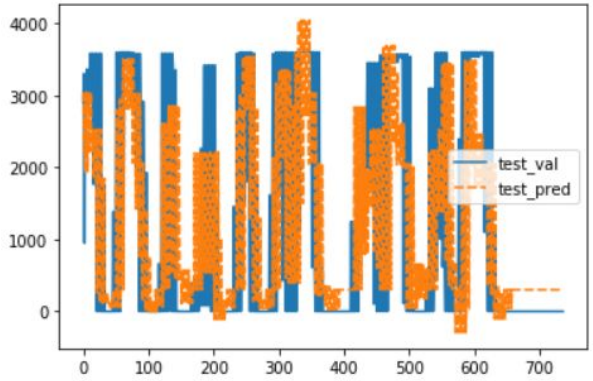
Lookback = 5 time steps
(Stacked LSTM)

- RMSE = 938.67
- ACC = 22.93 %



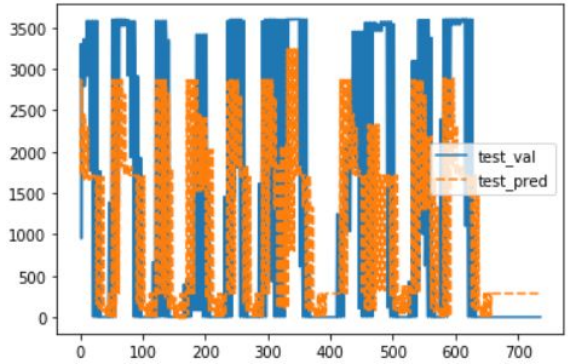
Lookback = 3 time steps
(Vanilla LSTM)

- RMSE = 937.00
- ACC = 15.54 %



Lookback = 5 time steps
(Vanilla LSTM)

- RMSE = 945.10
- ACC = 23.61 %

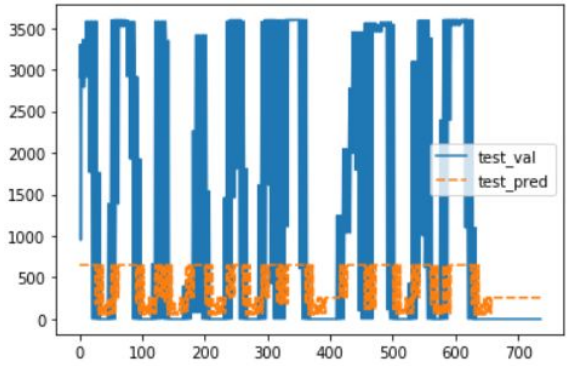


Lookback = 5 time steps
(Stacked LSTM, tanh, relu)

- RMSE = 1134.68
- << ACC = 26.46 %

(Stacked LSTM, tanh, tanh)

- Acc ~ 27% >>



Another Demo