

結合智慧電錶之 住家用電量預測

Household Electricity Demand
Forecasting with Smart Meter Data

陳以新

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01

Introduction

Introduction

➤ Motivation

- Increasing Electricity Demand
- Track and control with smart meter data
- Load dispatching

➤ Purpose

- Electricity demand forecasting with smart meter data

02

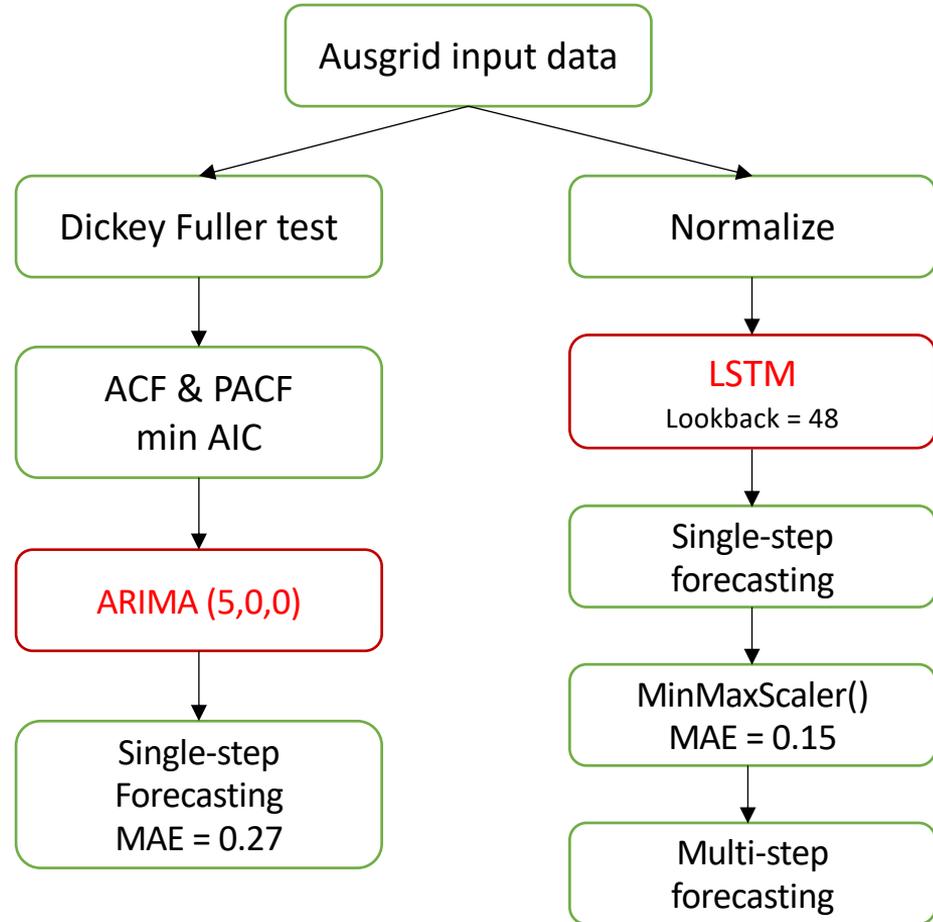
Method

Method

- Solar home electricity data from Ausgrid
 - Three years of half-hour electricity data for 300 solar homes (1 July 2010 to 30 June 2013)
- Select the first home and the electricity data of 1 month (1 July 2012 to 31 July 2012)
- ARIMA & LSTM

Method

Training data: 21 days
Testing data: 10 days

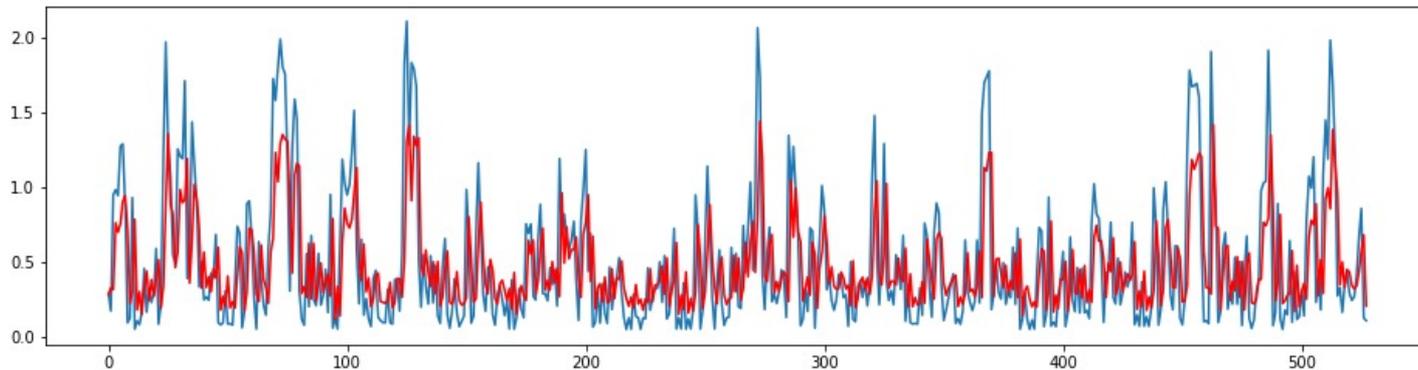


03

Result

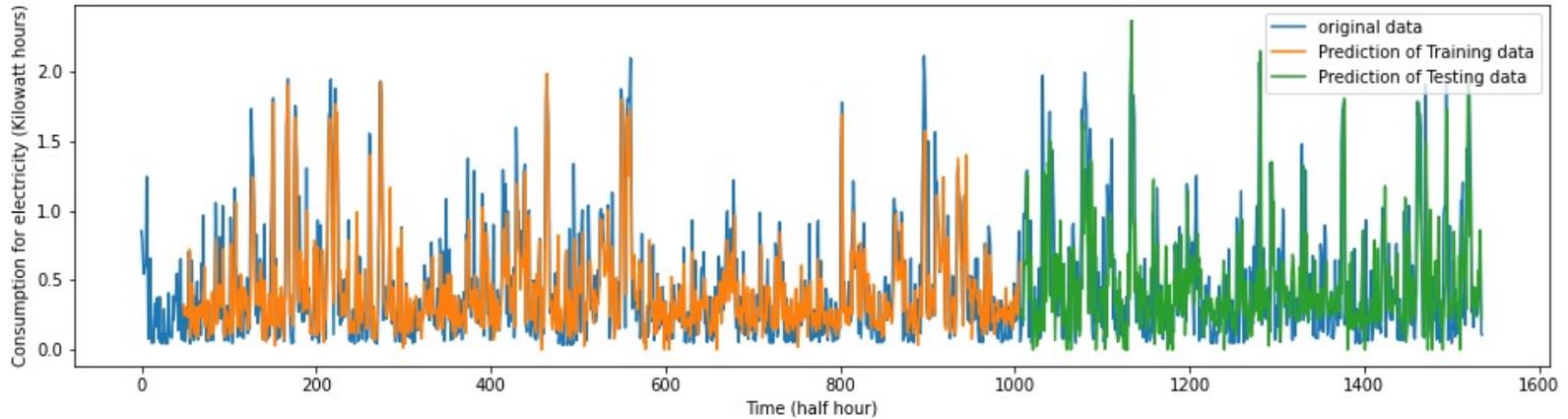
Result

- ✓ ARIMA single-step forecasting (Training score MAE = 0.27)
vs. LSTM single-step forecasting, training score MAE = 0.15



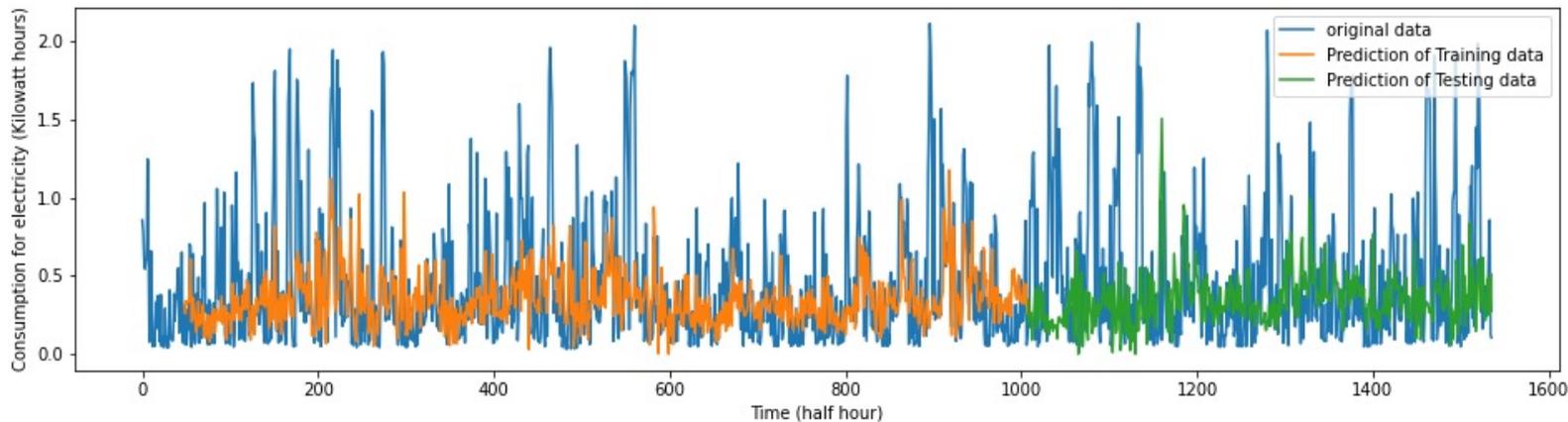
Result

- ✓ LSTM Single-step forecasting



Result

- ✓ LSTM Multi-step forecasting



Result

- ✓ LSTM Mean Absolute Error (Kilowatt hours)

LSTM MAE	Single-step	Multi-step
Training data	0.15	0.25
Testing data	0.27	0.29

04

Discussion
& Conclusion

Discussion & Conclusion

- LSTM gets better result than ARIMA does in this forecasting
- Single-step forecasting with LSTM is accurate
- Multi-step forecasting result is not as accurate as single-step gets; however, going with single-step forecasting, the result may still be useful for load dispatching

THANK YOU
