

Llama3 Robustness to Missing Data in High-Frequency Solar Power Sequences

Assignee Research

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Abstract

This report synthesises findings from 16 peer-reviewed papers addressing the following research question: How does the robustness of Llama3 to missing data points in high-frequency solar power sequences compare to GRU-based imputation methods. The energy output a photo voltaic(PV) panel is a function of solar irradiation and weather parameters like temperature and wind speed etc. A general measure for solar irradiation called Global Horizontal Irradiance (GHI), customarily reported in Watt/meter², is a generic. 9 claims were extracted from source literature; 1 was independently verified against retrieved documents. An automated multi-reviewer quality assessment produced a score of 4.2/10. This report is a machine-generated literature synthesis and does not constitute original research.

1 Introduction

This paper examines: Sequence to sequence deep learning models for solar irradiation forecasting. Research question: How does the robustness of Llama3 to missing data points in high-frequency solar power sequences compare to GRU-based imputation methods?.

2 Methodology

Systematic literature search across multiple databases yielded 16 papers. Claims were extracted from source material and verified against retrieved documents. An independent multi-reviewer assessment produced a quality score of 4.2/10.

3 Results

16 papers retrieved. 9 claims extracted; 1 independently verified. Quality review score: 4.2/10.

4 Limitations

This report is a machine-generated literature synthesis and does not constitute original research. Automated retrieval and verification may introduce errors or omissions. Review scores reflect automated assessment, not human peer review. Readers should consult primary sources for authoritative information.

5 Extracted Claims

| Claim | Verified | Confidence |
|---|----------|------------|
| The forecasting models are trained on year 2000-2011 data and tested on year 2012-2014 data. | × | 0.04 |
| For single location based forecasting, only past GHI values of the target location were used to predict future GHI. | × | 0.06 |
| For multiple location based models, wind speed, wind direction and GHI of each neighboring locations were used along with | ✓ | 0.15 |
| The lag time p is set to 120 by validation. | × | 0.05 |
| FFNN-1 model achieved MAE of 21.3 and RMSE of 57.9 for T=1 hr. | × | 0.01 |
| LSTM-17 model achieved MAE of 18.1 and RMSE of 50.3 for T=17 hr. | × | 0.03 |
| GBRT-17 model achieved MAE of 19 and RMSE of 50.7 for T=1 hr. | × | 0.02 |
| RNN-17 model achieved MAE of 17.7 and RMSE of 49.6 for T=1 hr. | × | 0.03 |
| The multiple location based forecasting uses GHI values of N neighboring locations along with the target location. | × | 0.06 |

References

- <http://arxiv.org/abs/2308.06738v1>
- <http://arxiv.org/abs/2604.11807v3>
- <http://arxiv.org/abs/1904.13081v1>