

# ANN Based Load Forecasting Model for Short Term Planning: A Case Study of Ota Community in Nigeria

[Ayokunle Awelewa](#); [Ayobami Olajube](#); [Kayode Ojo](#); [Isaac Samuel](#); [Henry Davies](#); [Olubunmi Akinola](#)  
[All Authors](#)

•

•

---

## [Abstract](#)

Document Sections

•

I.

Introduction

II.

REVIEW WORKS ON LOAD FORECASTING

•

III.

RESEARCH FRAMEWORK (A CASE STUDY OF OTA)

IV.

RESULTS AND DISCUSSION

V.

Conclusion

**Abstract:**

Load forecasting is fundamentally crucial to the efficient and effective operations of power systems, as accurate load forecast results aid in keeping risks incurred during decision-making processes to a minimum, and also lead to reductions in costs associated with power plant operations. Hence, this paper focuses on short-term load forecasting for a 33/11-kV transmission sub-station in Ota, Ogun State, Nigeria, using an artificial neural network (ANN). The study uses five neural network input parameters, such as days of the week, time of the day in hours, working days, weekends, and total daily load data from two previous weeks. The resulting output parameters after several training (using the Bayesian Regularization (BR) algorithm in the MATLAB ANN toolbox), validation, and testing sessions are the load data for the next two weeks. The performance of the developed model is evaluated using regression plots and the mean absolute deviation (MAD) as well as mean squared error (MSE) indices. Values of 0.993, 0.025, and 0.0025 for regression, MAD, and MSE, respectively, are obtained.

**Published in:** [2023 International Conference on Innovation and Intelligence for Informatics, Computing, and Technologies \(3ICT\)](#)

**Date of Conference:** 20-21 November 2023

**Date Added to IEEE Xplore:** 19 January 2024

**ISBN Information:**

**ISSN Information:**

**DOI:** [10.1109/3ICT60104.2023.10391739](#)

**Publisher:** IEEE

**Conference Location:** Sakheer, Bahrain

**I. Introduction**

Lack of adequate supply of electricity is still a major problem around the globe that is prevalent in developing and underdeveloped countries. Around the globe, 25% don't have access to electricity, and many who do also experience its epileptic supply. [1]. Lack of a stable supply of electricity hinders sustainable development and any form of economic growth [2]. Due to its inherent characteristics, electricity differs from other commercial products. For instance, it is not easily stored; therefore, it is most times generated as required, especially in centralized electrical power systems. Globally, electrical power companies come up with detailed objectives in order to ensure consumer satisfaction and

retain the patronage of consumers, and this all boils down to providing consumers with high-quality stable electricity. In developing nations, and Nigeria in particular, these electricity and transmission companies are faced with a lot of challenges that have given rise to stability and power quality issues. These challenges are often associated with the fact that there is little information or data available for the utility companies to make informed decisions and propose plans towards achieving set goals.

Sign in to Continue Reading

Authors

[Ayokunle Awelewa](#)

Department of Electrical and Information Engineering, Covenant University, Ota, Ogun State, Nigeria

[Ayobami Olajube](#)

Department of Electrical and Computer Engineering, Florida State University, Tallahassee, Florida, United States

[Kayode Ojo](#)

Department of Mechatronics Engineering, Bells University of Technology, Ota, Ogun State, Nigeria

[Isaac Samuel](#)

Department of Electrical and Information Engineering, Covenant University, Ota, Ogun State, Nigeria

[Henry Davies](#)

Department of Electrical and Information Engineering, Covenant University, Ota, Ogun State, Nigeria

[Olubunmi Akinola](#)

Department of Electrical Engineering, Federal University of Agriculture, Abeokuta, Ogun State, Nigeria

Figures

References

Keywords

Metrics

**More Like This**

[Short Term Load Forecasting Using an Artificial Neural Network Trained by Artificial Immune System Learning Algorithm](#)

2010 12th International Conference on Computer Modelling and Simulation

Published: 2010

[Application of variable structure artificial neural network for mid-long term load forecasting](#)

2010 2nd IEEE International Conference on Information Management and Engineering

Published: 2010

[Show More](#)

# References

References is not available for this document.

## IEEE Personal Account

- [CHANGE USERNAME/PASSWORD](#)

## Purchase Details

- [PAYMENT OPTIONS](#)
- [VIEW PURCHASED DOCUMENTS](#)

## Profile Information

- [COMMUNICATIONS PREFERENCES](#)
- [PROFESSION AND EDUCATION](#)
- [TECHNICAL INTERESTS](#)

## Need Help?

- [US & CANADA: +1 800 678 4333](#)
- [WORLDWIDE: +1 732 981 0060](#)
- [CONTACT & SUPPORT](#)

## Follow

- 
- 
- 
- 
- 

[About IEEE Xplore](#) | [Contact Us](#) | [Help](#) | [Accessibility](#) | [Terms of Use](#) | [Nondiscrimination Policy](#) | [IEEE Ethics Reporting](#) | [Sitemap](#) | [IEEE Privacy Policy](#)

A public charity, IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.

© Copyright 2024 IEEE - All rights reserved, including rights for text and data mining and training of artificial intelligence and similar technologies.