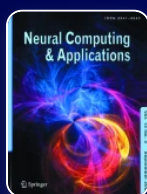


[Home](#) > [Neural Computing & Applications](#) > [Article](#)

Application of MLP Networks to Bond Rating and House Pricing



| Original Article | Published: 15 February 2014

| Volume 8, pages 226–234 (1999) [Cite this article](#)[Save article](#)[View saved research](#) >[Neural Computing & Applications](#)[Aims and scope](#) →[Submit manuscript](#) →[H. Daniels](#)¹ & [B. Kamp](#)¹[616](#) Accesses [56](#) Citations [3](#) Altmetric [Explore all metrics](#) →

Abstract

Feedforward neural networks are receiving growing attention as a data modelling tool in economic classification problems. It is well known that controlling the design of a neural network can be cumbersome. Inaccuracies may lead to numerous problems in the application, such as higher errors due to local optima, overfitting and ill-conditioning of the network, especially when the number of observations is small. In this paper we provide a method to overcome these difficulties by regulating the flexibility of the network, and by rendering measures for validating the final network. In particular, a method is proposed to equilibrate the number of hidden neurons based on 5-fold cross-validation. In the validation process, the performance of the neural network is compared with a linear model using 5-fold cross-validation. In both case studies, the degree of monotonicity of

the output of the neural network, with respect to each input variable, is calculated by numerical differentiation. The outcomes of this analysis are compared to what is expected from economic theory. Furthermore, a special class of monotonic neural networks and a corresponding training algorithm are developed. It is shown in the second case study that networks in this class have less tendency to overfitting than ordinary neural networks. The methods are illustrated in two case studies: predicting the price of housing in the Dutch city of Den Bosch; and the classification of bond ratings.

 This is a preview of subscription content, [log in via an institution](#)  to check access.

Access this article

[Log in via an institution](#) →

Subscribe and save

Springer+

from €37.37 /Month

- Starting from 10 chapters or articles per month
- Access and download chapters and articles from more than 300k books and 2,500 journals
- Cancel anytime

[View plans](#) →

Buy Now

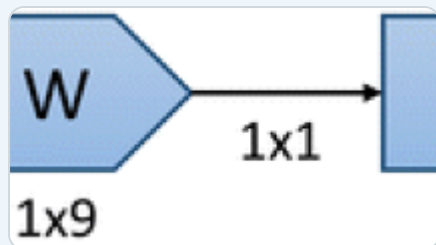
[Buy article PDF 39,95 €](#)

Price includes VAT (Poland)

Instant access to the full article PDF.

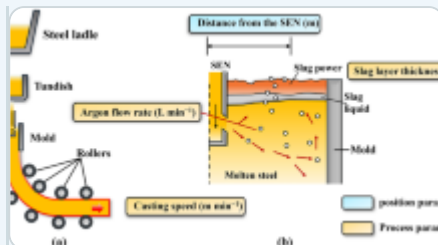
[Institutional subscriptions](#) →

Similar content being viewed by others



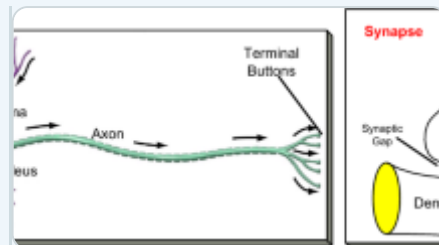
An MLP-based representation of neural tensor networks for the RDF data models

Article | 23 June 2017



A Novel Feedforward Neural Network Model for Predicting the Level Fluctuation in Continuous Casting Mold

Article | 03 July 2025



Operational neural networks

Article | Open access
06 March 2020

Explore related subjects

Discover the latest articles, books and news in related subjects, suggested using machine learning.

[Learning algorithms](#)

[Machine Learning](#)

[Neural decoding](#)

[Quantitative Finance](#)

[Statistical Learning](#)

[Artificial Intelligence](#)

[Neural Network Optimization in Classification Systems](#)

Author information

Authors and Affiliations

Department of Economics, Tilburg University, Tilburg, The Netherlands, NL

H. Daniels & B. Kamp

Rights and permissions

[Reprints and permissions](#)

About this article

Cite this article

Daniels, H., Kamp, B. Application of MLP Networks to Bond Rating and House Pricing. *Neural Comput & Applic* **8**, 226–234 (1999). <https://doi.org/10.1007/s005210050025>

Published

15 February 2014

DOI

<https://doi.org/10.1007/s005210050025>

Issue date

August 1999

[Key words: Classification; Error estimation; Finance; Monotonic neural networks](#)

Search

Search by keyword or author



Navigation

Find a journal

Publish with us

Track your research