

# Author's Accepted Manuscript

Multi-objective evolutionary feature selection for  
online sales forecasting

F. Jiménez, G. Sánchez, J.M. García, G. Sciavicco,  
L. Miralles



PII: S0925-2312(16)31561-2  
DOI: <http://dx.doi.org/10.1016/j.neucom.2016.12.045>  
Reference: NEUCOM17864

To appear in: *Neurocomputing*

Received date: 10 December 2015  
Revised date: 25 November 2016  
Accepted date: 14 December 2016

Cite this article as: F. Jiménez, G. Sánchez, J.M. García, G. Sciavicco and L. Miralles, Multi-objective evolutionary feature selection for online sale forecasting, *Neurocomputing*, <http://dx.doi.org/10.1016/j.neucom.2016.12.045>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and a review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

# Multi-Objective Evolutionary Feature Selection for Online Sales Forecasting

Jiménez, F.\* , Sánchez, G.\* , García, J.M.\*

*Faculty of Computer Science, University of Murcia (Spain)*

Sciavicco, G.\*

*Department of Mathematics and Computer Science, University of Ferrara (Italy)*

Miralles, L.\*

*Faculty of Computer Science, Universidad Panamericana (Mexico)*

---

## Abstract

Sales forecasting uses historical sales figures, in association with products characteristics and peculiarities, to predict short-term or long-term future performance in a business, and it can be used to derive sound financial and business plans. By using publicly available data, we build an accurate regression model for online sales forecasting obtained via a novel feature selection methodology composed by the application of the multi-objective evolutionary algorithm ENORA (Evolutionary NON-dominated Radial slots based Algorithm) as search strategy in a wrapper method driven by the well-known regression model learner Random Forest. Our proposal integrates feature selection for regression, model evaluation, and decision making, in order to choose the most satisfactory model according to an *a posteriori* process in a multi-objective context. We test and compare the performances of ENORA as multi-objective evolutionary search strategy against a standard multi-objective evolutionary search strategy such as NSGA-II (Non-dominated Sorted Genetic Algorithm), against a classical backward search strategy such as RFE (Recursive Feature Elimination), and against the original data set.

*Keywords:* Multi-objective evolutionary algorithms, feature selection, random forest, regression model, online sales forecasting

---

\*Corresponding author.

*Email addresses:* fernan@um.es (Jiménez, F.), gracia@um.es (Sánchez, G.), jmgarcia@um.es (García, J.M.), scvgnu@unife.it (Sciavicco, G.), lmiralles@up.edu.mx (Miralles, L.)

Download English Version:

<https://daneshyari.com/en/article/4947651>

Download Persian Version:

<https://daneshyari.com/article/4947651>

[Daneshyari.com](https://daneshyari.com)