



## **A GREATER KNOWLEDGE EXTRACTION CODED AS FUZZY RULES AND BASED ON THE FUZZY AND TYPICALITY DEGREES OF THE GKPFM CLUSTERING ALGORITHM**

**B. OJEDA-MAGAÑA<sup>1</sup>, R. RUELAS<sup>1</sup>, F. S. BUENDÍA-BUENDÍA<sup>2</sup>, D. ANDINA<sup>2</sup>**

<sup>1</sup>*DIP-CUCEI Universidad de Guadalajara*

*José Guadalupe Zuno No. 48. C.P. 45101 Zapopan, Jalisco, México.*

*E-mail: benojed@hotmail.com, [rruelas@newton.dip.udg.mx](mailto:rruelas@newton.dip.udg.mx)*

<sup>2</sup>*Depto.SSR Universidad Politécnica de Madrid*

*E.T.S.I Ingenieros de Telecomunicación*

*Madrid, España.*

*Email: [fsbuendia@gmv.es](mailto:fsbuendia@gmv.es), [diego@gc.ssr.upm.es](mailto:diego@gc.ssr.upm.es)*

**ABSTRACT**—This work proposes a method to generate a greater and bigger knowledge from a data set. The GKPFM clustering algorithm is used for that. So, for a given number of clusters it identifies their location and their approximate shape. The relations among the variables of the data set can be found with these clusters, and they can be expressed as conditional rules such as "If/Then." The GKPFM provides the membership values and the typicality values from which a knowledge base is generated through two fuzzy models, and this can be used in order to classify new data and to determine if these new data are typical, atypical or noise. So, a better expert decision can be made based on the results of these models.

**Key Words:** Knowledge extraction, Fuzzy rules, GKPFM Clustering, Fuzzy Clustering, Possibilistic Clustering, Gustafson-Kessel Clustering.