



UNIVERSITY: PUBLIC UNIVERSITY OF NAVARRE (UPNA)

WIT PROGRAMME'S RESEARCH LINE NAME: ARTIFICIAL INTELLIGENCE APPLIED TO REAL-TIME DATA PROCESSING

DOCTORAL PROGRAMME: Doctorate in Science and Industrial Technologies
<https://www.unavarra.es/escuela-doctorado/doctorate-programs/current-plan/science/doctorate-in-science-and-industrial-technologies?languageId=1>

COMPLETE DESCRIPTION OF THE LINE

Today, an important asset of a business is data. Moreover, a business needs to keep up to date with data in real-time. A hot topic in this field is data stream mining, which is the process of extracting knowledge from continuous rapid data records coming to the system in a stream. A data stream is an ordered sequence of instances in time, which in many applications can be read only once or a small number of times using limited computing and storage resources. Examples include surveillance systems, communication networks, on-line transactions in the financial market, industry production processes and so on. Some data streams properties are concept drift and evolution, feature-evolution and limited labelled data. Each one adds a challenge to data stream mining tasks. In data stream mining for classification problems, the goal is to predict the class or value of new instances in the data stream given some knowledge about the class or values of previous instances. Nowadays, transparency is required for the mined systems so that the final users can understand the decisions. The aim of the thesis is to develop interpretable systems for data stream classification mining.



RESEARCH GROUP NAME: APPROXIMATE REASONING AND ARTIFICIAL INTELLIGENCE

COORDINATOR:

- HUMBERTO BUSTINCE
SOLA:https://academicos.unavarra.es/CawDOS//jsf/seleccionActividades/seleccionActividades.jsf?id_pers=278&idioma=es&elmeucv=N
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MEMBERS OF THE LINE RESEARCH:

José Antonio Sanz Delgado (Tutor)

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ANOTHER RESEARCH LINES OF THE GROUP:

- Classification
- (Evolutionary) Fuzzy rule-based classification systems
- Imbalanced classification
- Interval-valued fuzzy sets

- Entities involved in research lines and contact person:



✓ Academic entities:

Universidade Federal de São Carlos, Sao Carlos (Brasil): Heloisa de Arruda Camargo

University of Essex, Colchester (Inglaterra): Hani Hagra

Universidade Federal do Rio Grande, Rio Grande (Brasil): Giancarlo Lucca

✓ Industrial entities:

- Joint supervision of doctoral thesis with international universities or non academic institutions:

“Aggregation and pre-aggregation functions in fuzzy rule-based classification systems” by Giancarlo Lucca (Universidade Federal do Rio Grande, Brazil) in 2018

“Admissible interval-valued overlap functions in fuzzy rule-based classification systems” under development by Tiago Da Cruz Asmus co-supervised with Graçaliz Pereira Dimuro (Universidade Federal do Rio Grande, Brazil)

- Brief group overview

The Artificial Intelligence and Approximate Reasoning Research Group (GIARA) began its trajectory focusing on mathematical modelling, especially in the context of Fuzzy Set Theory. The experience accumulated in this line generated different theoretical-practical research, mostly based on machine learning and/or computer vision. This research has led to advances in areas as varied as automatic control, food safety, big data or convolutional/deep neural networks.



Beyond the academic impact, the ability to connect mathematical theory with advanced technical tools has led to applied developments in industrial, agrobiotechnological and medical environments. To date, GIARA has generated more than 400 indexed articles, collaborating with more than 200 different authors, and maintains active projects with researchers from 4 continents.

- Link of the group to the “Portal of scientific production”

https://academicos.unavarra.es/CawDOS//jsf/seleccionActividades/seleccionActividades.jsf?id_pers=7828&idioma=es&elmeucv=N

ACADEMIC QUALIFICATIONS: Computer Science

SPECIFIC REQUIREMENTS: Knowledge in machine and data mining