

SOLERES

A Spatio-Temporal Environmental Management Information System based on Neural-Networks, Agents and Software Components.



TIN2007-61497

This project includes and develops some multi-disciplinary applied research (such as software engineering, knowledge and artificial intelligent engineering and ecology) for the modelling of an intelligent information system of environmental management. On the one hand, this project aims to study the automatic generation of ecological maps from satellite images.

The automatic obtaining of these maps may be useful for critical actions of environmental management such as prediction/prevention and taking decision tasks in natural disasters (i.e. floods, forest fires or earthquakes). Due to the diversity of final users (i.e. politicians, technicians, administrators, etc.) and because of the large amount of different information (some confidential criticism), it is important to have real scientific-technical proposals and practices for the construction of quick and efficient data exploitation systems (environmental, in this example).

These proposals and practices allow the human-machine interaction by means of dynamic user interfaces that adapt to the users habits and by some intelligent software advisers (agents) that help the users in the process of data exploitation. They also allow the taking decisions tasks (environmental) and the prediction/prevention tasks (which are the most important). The information system will be defined through the paradigm of Computer Supported Cooperative Work (CSCW) and implemented with intelligent agents technology and multi-agent architecture. In order to allow the process of data exploitation, we will identify and structure the kind of information that could be queried and the types of queries, using techniques of hierarchical decomposition (trees, branch and bound) and neural-networks. For the integration of all techniques adopted and developed during the project, we will study the evaluation, interoperability, adaptability, and proofs (individual and collective), and the assembly of them by using software development techniques based on COTS components. Finally, we will implement a prototype of the system.

Groups

[Applied Computing Group \(TIC-211\)](#)

The Applied Computing Group (TIC-211) is a PAI research group of the Junta de Andalucía (Spain) that uses IT & CS tools, methods, frameworks and standards to improve the application issues of R&D projects and developing novel research issues from the experience and application.

[Environmental and Computers Group \(TEP-234\)](#)

The Applied Computing Group (TEP-234) is a PAI research group of the Junta de Andalucía (Spain) that uses IT & CS tools and the collaboration of developers and researchers that aims to produce software, systems, publications, and services that are beneficial to the ecological and environmental sciences.



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SOLERES Project

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