

Seminars on Information Technology Outlook – PhD Program in Computer Science and Mathematics



Prof. Nicolás Marichal



Universidad de La Laguna, Tenerife, Spain



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Sala Consiglio

Intelligent Desalination and Applied Renewable Energies

The seminar presents the work of the INGEMAR Research Group within the IDIWATER project at the University of La Laguna, which develops innovative and sustainable desalination technologies integrated with renewable energy. Their research spans intelligent desalination, renewable-powered systems, and agricultural applications of non-conventional water resources. Using AI techniques such as neural networks, neuro-fuzzy systems, and genetic algorithms, the group designs intelligent control systems to optimize reverse osmosis plants. A featured genetic neuro-fuzzy model selects optimal control actions for energy efficiency and water quality. The findings show that these methods boost system performance, adapt to changing marine conditions, and enhance resilience to climate change while providing interpretable, industry-relevant control rules.

G. Nicolás Marichal Plasencia holds dual PhDs in Computer Science and Mechanical Engineering and has been a Full Professor since 2016. His research explores Artificial Intelligence applied to engineering problems such as diagnosis, vibration control, and system modeling. Over the years, he has published around 100 works—including influential papers in leading journals—and co-edited a monograph on fuzzy modeling. He has led several national and European research projects, collaborated with universities worldwide, and contributed to industry through patents and research contracts. Beyond his research, he actively reviews for top scientific journals and has supervised award-winning doctoral theses.

