

# Tutorial at SSCI 2017

## Estimation of distribution. Basic and advanced topics.

Summary:

Estimation of distribution algorithms (EDAs) are Evolutionary Algorithms based on the use of probability distributions and machine learning models in order to extract information of the selected individuals and produce new fitter individuals. In this tutorial we provide the attendant with:

- i) The basic tools to understand, design and codify EDAs in order to solve optimization problems, and introduce several successful applications in different fields, which show the potential of EDAs
- ii) The latest advances of the field such as EDAs specifically design to solve permutation-based optimization problems or to solve constraint optimization problems
- iii) a list of open research questions, which could motivate and extend the research in this type of algorithms.



Bio: Prof. Lozano graduated in Mathematics (1991) and Computer Science (1992) at the University of the Basque Country (UPV/EHU) (Spain). In 1998 he got his PhD degree from the University of the Basque Country UPV/EHU, where he was awarded with the extraordinary prize for the best thesis in engineering. He got an assistant professor position at the University of the Basque Country (UPV/EHU) in 1993 and became a full professor at the Department of Computer Science and Artificial Intelligence in 2008.

Since 2005 he leads the Intelligent Systems Group (ISG) based in the Computer Science School (UPV/EHU). His research areas are evolutionary computation, machine learning and probabilistic graphical models and its application in the solution of real problems in biomedicine, industry or finance. He has published 4 books, more than 100 scientific ISI journal articles and about 150 contributions to national and international conferences. These publications have received more than 8600 citations. Prof. Lozano is associate editor of IEEE Trans. on Evolutionary Computation and IEEE Trans. on Neural Network and Learning Systems among other prestigious journals.