

□ Title, name of the speaker, abstract (informative but short: 5 – 10 lines);  
Bayesian Classifiers

Pedro Larrañaga, Concha Bielza, Bojan Mihaljevic

During this tutorial different Bayesian classifier models will be presented, both for uni-dimensional classification and also for multi-dimensional classification. The use of the `bnclassify` software package developed in R by the speakers will complement the theoretical presentations with practical exercises.

□ A detailed outline of the topics to be presented, with a short comment on each topic;  
-Probabilistic classifiers  
-Uni-dimensional Bayesian classifiers: naïve Bayes, seminaive Bayes, tree augmented naïve Bayes, k-dependence Bayesian classifiers, Markov blanket based, Bayesian multinets  
-Multi-dimensional Bayesian classifiers: decomposable MBCs, Map inference, learning from data  
-The `bnlearn` and `bnclassify` packages

□ A description of the target audience and pre-requisites expected from participants;  
The target audience for this tutorial is made up of people interested in the supervised classification task within machine learning. The required knowledge is basic knowledge of statistics and the R package.

□ A brief CV of the speaker indicating his/her background in the tutorial area;  
Pedro Larrañaga is Full Professor in Computer Science and Artificial Intelligence at the Universidad Politécnica de Madrid. His research interests are primarily in the areas of probabilistic graphical models, metaheuristics for optimization, data science, classification models, and real applications, such as biomedicine, bioinformatics, neuroscience, industry 4.0, and sports. He has published more than 150 papers in impact factor journals and has supervised 30 PhD theses. He is fellow of the European Association for Artificial Intelligence since 2012 and that of the Academia Europaea since 2018. He has been awarded the 2013 Spanish National Prize in Computer Science and the prize of the Spanish Association for Artificial Intelligence in 2018. In 2020, he has received the Amity Research Award in Machine Learning in New Delhi.

Concha Bielza is Full Professor of Statistics and Operations Research with the Departamento de Inteligencia Artificial, Universidad Politécnica de Madrid. Her research interests are primarily in the areas of probabilistic graphical models, decision analysis, metaheuristics for optimization, data mining, classification models, and real applications, such as biomedicine, bioinformatics, neuroscience, industry, and sport analytics. She has published more than 120 papers in impact factor journals and has supervised 17 PhD theses. She was awarded the 2014 UPM Research Prize and in 2020 by the Amity Research Award in Machine Learning in New Delhi.

Bojan Mihaljevic is a post-doctoral researcher at the Departamento de Inteligencia Artificial, Universidad Politécnica de Madrid. His main research interests are in the areas of probabilistic graphical models, machine learning, and applications in neuroscience. He has published 6 papers in impact factor journals and is the author of the `bnclassify` R package.

Contact address, phone, e-mail, webpage of the speaker;

Pedro Larrañaga

[pedro.larranaga@fi.upm.es](mailto:pedro.larranaga@fi.upm.es)

<http://cig.fi.upm.es/CIGmembers/pedro-larranaga>

Concha Bielza

[mcbielza@fi.upm.es](mailto:mcbielza@fi.upm.es)

[http://cig.fi.upm.es/CIGmembers/concha\\_bielza](http://cig.fi.upm.es/CIGmembers/concha_bielza)

Bojan Mihaljevic

[bmihaljevic@fi.upm.es](mailto:bmihaljevic@fi.upm.es)

[http://cig.fi.upm.es/CIGmembers/bojan\\_mihaljevic](http://cig.fi.upm.es/CIGmembers/bojan_mihaljevic)

Technical requirements (equipment, hardware, and software).

R software.