UNIVERSIDADE DE ÉVORA
ESCOLA DE CIÊNCIAS E TECNOLOGIA
DEPARTAMENTO DE MATEMÁTICA

Centro de Investigação em Matemática e Aplicações
Departamento de Matemática
Programa de Doutoramento em Matemática

Seminário/Seminar

2/10/2025, CLAV Anf 1, 15h00

Probabilistic Vector Machines

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Abstract: We propose a Support Vector Machine (SVM) methodology for finding accurate probabilities of class memberships in supervised classification problems.

Classical SVMs do not complement their class prediction with reliable confidence measures for each class assignment. While classical statistical methodologies can address this problem, they tend to rely on restrictive assumptions that are often difficult to guarantee in practice. Following a fully distribution-free non-parametric approach, we show how, first two-class classification problems, sequences of weighted SVM predictions can be used to consistently estimate probabilities of class membership. This methodology is then extended to the general multi-class classification problem. Numerical experiments reveal the good scaling properties of the proposal, and the relative advantages of its class probability estimates over alternative approaches.

Esta comunicação será, em parte, baseada no seguinte artigo, recente publicado na revista "Computers and Operations Research"

Duarte Silva A.P. (2025), "Probabilistic Vector Machines", Computers and Operations Research, Vol 183, https://doi.org/10.1016/j.cor.2025.107203

Acknowledgements: This talk has been partially funded by national funds through the FCT – Fundação para a Ciência e a Tecnologia, I.P., under the scope of the project UIDB/04674/2020 (https://doi.org/10.54499/UIDB/04674/2020), Centro de Investigação em Matemática e Aplicações (CIMA).

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