

# Control and machine learning

*jeudi 11 mai 2023 10:10 (45 minutes)*

We present some recent results on the interplay between control and Machine Learning.

We adopt the perspective of the simultaneous or ensemble control of systems of Residual Neural Networks (ResNets) and present a genuinely nonlinear and constructive method, allowing to show that such an ambitious goal can be achieved, estimating the complexity of the control strategies.

This property is rarely fulfilled by the classical dynamical systems in Mechanics and the very nonlinear nature of the activation function governing the ResNet dynamics plays a determinant role.

The bridge towards optimal transport will also be discussed.

This lecture is inspired in joint work, among others, with Borjan Geshkovski (MIT), Carlos Esteve (Cambridge), Domènec Ruiz-Balet (IC, London), Dario Pighin (Sherpa.ai) and Martin Hernández (FAU).

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