**Reda Chhaibi & Serge Gratton - AI for physical models with geome-**

While having a long lasting collaboration with the chair «Collaboration between Data Assimilation and Machine Learning», held by Serge GRATTON, our chair's activity centered around two aspects.

I. Some more theoretical works in AI that hinged around new paradigms inspired from geometry or physics: Free probability and network designs , New neural network architectures (spiking NNs, dilated convolutions with learnable spacings).

II. On the other hand, there were strong interactions with the industrial world: half of the PhDs were carried by topics proposed by industrial partners. The main tools were sensitivity analysis and computer code experiments: Sensitivity analysis for dimension reduction, interpretability and fairness, Geometric optimisation problems for reliability of solutions produced by solvers, Bayesian assimilation of complex computer codes, Smart geometric encoding in neural nets.

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