



Du
17
MAI.
2024

16h00
-
17h00

SÉMINAIRE DES DOCTORANTS DE FIME

A gradient flow on control space with rough initial condition

Institut Henri Poincaré
Salle 01

INSCRIPTION

We consider the (sub-Riemannian type) control problem of finding a path going from an initial point x to a target point y , by only moving in certain admissible directions. We assume that the corresponding vector fields satisfy the Hörmander condition, so that the classical Chow-Rashevskii theorem guarantees the existence of such a path. One natural way to try to solve this problem is via a gradient flow on control space. However, since the corresponding dynamics may have saddle points, any convergence result must rely on suitable (e.g. random) initialization. We consider the case when this initialization is irregular, which is conveniently formulated via Lyons' rough path theory. In some simple cases, we manage to prove that the gradient flow converges to a solution, if the initial condition is the path of a Brownian motion (or rougher). The proof is based on combining ideas from Malliavin calculus with Łojasiewicz inequalities. A possible motivation for our study comes from the training of deep Residual Neural Nets, in the regime when the number of trainable parameters per layer is smaller than the dimension of the data vector.



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HORAIRES

L'institut :

- lundi au vendredi de 8h30 à 18h,
- fermé les jours fériés.

Le musée - Maison Poincaré :

- lundi, mardi, jeudi et vendredi de 9h30 à 17h30,
- samedi de 10h à 18h,
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