A variational view at gradient flows in metric spaces

Antonio Segatti (University of Pavia)

We present a novel variational approach to gradient-flow evolution in metric spaces. In particular, we advance a functional defined on entire trajectories, whose minimizers converge to curves of maximal slope for geodesically convex energies. The crucial step of the argument is the reformulation of the variational approach in terms of a dynamic programming principle, and the use of the corresponding Hamilton-Jacobi equation. The result is applicable to a large class of nonlinear evolution PDEs including nonlinear drift-diffusion, Fokker-Planck, and heat flows on metric-measure spaces.