
SOPHIE MORIN, Polytechnique Montréal

Equivariant machine learning for collision detection of ellipses and related shapes

Computing the distance between two objects in space, in particular determining whether they have collided or are very close to doing so, is essential in a wide range of computational applications. It is trivial when the objects are spheres, line segments, or other very simple shapes, and good algorithms are known for polytopes. However, something as apparently simple as the distance between two ellipses in the plane remains surprisingly difficult if one wants both speed and accuracy. In this talk, I will discuss an equivariant machine learning framework for this problem and present some results from ongoing work.