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Nicolas Charon - Registration of shape graphs with partial matching constraints

Thursday, October 13, 2022 9:00 AM (1 hour)

This talk will discuss an extension of the elastic curve registration framework to a general class of geometric objects which we call (weighted) shape graphs, allowing in particular the comparison and matching of 1D geometric data that are partially observed or that exhibit certain topological inconsistencies. Specifically, we generalize the class of second-order invariant Sobolev metrics on the space of unparametrized curves to weighted shape graphs by modelling such objects as varifolds (i.e. directional measures) and combining geometric deformations with a transformation process on the varifold weights. This leads us to introduce a new class of variational problems, show the existence of solutions and derive a specific numerical scheme to tackle the corresponding discrete optimization problems.