Learning of Lagrangian dynamics from data with uncertainty quantification

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I will show how to use Gaussian Process regression to learn variational dynamical systems from data. From the statistical framework uncertainty quantification for observables such as the Euler-Lagrange operator and Hamiltonians can be derived. The regression method can be shown to converge, overcoming the technical difficulty that variational descriptions are highly non-unique. Numerical examples include variational odes and pdes.

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