Mathematical Sciences

The University of Texas at El Paso

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Colloquium Series

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(Note the unusual day)

Candidate for the position of Assistant Professor in Computational Science

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Metric-Based Registration and Analysis of Functional Data

Functional data appears in nearly every branch of science, and it encompasses a variety of situations, including real-valued function, Euclidean curve, and trajectory on nonlinear manifolds. In this talk, I will introduce a comprehensive framework for joint registration and analysis of functional data. This framework uses the Fisher-Rao Riemannian metric to derive a proper distance on the quotient space of functions modulo the time-warping group. A convenient square-root velocity function (SRVF) representation transforms the Fisher-Rao metric into the standard L2 metric, simplifying the computations. This metric leads to efficient algorithms for registration and analysis of functional data, i.e. phase-amplitude separation, and additional computational tools for clustering and statistical modeling of the two components separately. The advantages of this framework are demonstrated using both simulated and real data from different application domains.

For further information, please contact Dr. Ori Rosen at orosen@utep.edu