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Identifying and Querying Local and Large-Scale Structures Using L∞ Norms in Visual Analytics

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Abstract

We introduce a new visual analytic framework based on the L∞ norm. This framework involves a three-operator algebra on hyper-rectangles. We have developed a visual analytic system that generates set-wise rules from simple gestures in an exploratory visual GUI. Logging these rules allows us to apply our analysis to a new sample or batch of data so that we can assess the validity and reliability of our visual-analytic model. The basic idea is to design an analytic system around rectangular (weighted hypercube) description regions. The composition of these regions (using three operators) can be used to define local and large-scale structures and provides the basis for a formal description of structures suitable for visual analytics.