

# SEMIPARAMETRIC SPATIAL-TEMPORAL MODEL

by

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## ABSTRACT

A semiparametric spatial-temporal model is proposed where the spatial/neighborhood component is assumed to be a monotone function. Isotonic regression using Pooled Adjacent Violators Algorithm (PAVA) embedded in the additive model is used to estimate the neighborhood component. Simulation results showed that the proposed semiparametric model has a better fit compared to that of the parametric model in cases of nonlinearity or when there is substantial misspecification error. Knowledge on monotonicity of the spatial distance indicators can indeed improve prediction of a spatial-temporal model.

**Keywords:** *Spatial-Temporal Model; Additive Model; Backfitting; Isotonic Regression; Pooled-Adjacent Violators Algorithm*