

A Simple Model for the Generation of LRD Self-similar Traffic Using Piecewise Affine Chaotic One-dimensional Maps

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Abstract: A qualitative and quantitative extension of the chaotic models used to generate self-similar traffic with long range dependence LRD is presented by means of the formulation of a model that considers the use of piecewise affine one-dimensional maps. Based on the disaggregation of the temporal series generated, a valid explanation of the behavior of the values of Hurst's exponents is proposed and the feasibility of their control from the parameters of the proposed model is shown.

Keywords: Chaos, chaotic maps, Hurst exponent, self-similarity, traffic modeling in computer networks.