Comparison of predictability of epileptic seizures by a linear and a nonlinear method

PE McSharry, LA Smith and L Tarassenko

Abstract

The performance of traditional linear (variance based) methods for the identification and prediction of epileptic seizures are contrasted with "modern" methods from nonlinear time series analysis. We note several flaws of design in demonstrations claiming to establish the efficacy of nonlinear techniques; in particular, we examine published evidence for precursor identification. We perform null hypothesis tests using relevant surrogate data to demonstrate that decreases in the correlation density prior to and during seizure may simply reflect increases in the variance.