

Exercise 9, Due date 26.06.2008 - 16 Points

Exercise 1: Mutual information

Calculate the mutual information between two correlated Gaussian random variables analytically and by estimation from simulated data.

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Exercise 2: Transfer entropy of VAR(2)

Consider a VAR(2) with $a_{22} = 0$. Calculate the transfer entropy from x_2 to the state variable x_1 assuming that the driving is independent and identically Gaussian distributed noise.

Compare your analytic calculation with the estimated transfer entropy from a simulated VAR(2).

For the corresponding matlab functions please look at the bottom of page

http://personal-homepages.mis.mpg.de/olbrich/complex_systems.html

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<http://www.mpipks-dresden.mpg.de/~tisean/>

http://personal-homepages.mis.mpg.de/olbrich/data_analysis.html