NetSci2011

June 6th-10th
Budapest, Hungary

The International School and Conference on Network Science

Bringing together leading researchers, practitioners, and teachers in network science (including analysts, modeling experts, visualization specialists, and others), NetSci fosters interdisciplinary communication and collaboration. The conference focuses on novel directions in networks research within the biological and environmental sciences, computer and information sciences, social sciences, finance and business.

http://netsci2011.net/

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Tamás Vicsek – Dept. of Biological Physics , ELTE, Hungary

** School speakers*

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NetSci Conference
Hungarian Academy of Sciences
Is dedicated to talks presenting the latest results in the field and their applications in various disciplines.

iCeNSA Interdisciplinary Center for Network Science & Applications

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Early registration (by April 15):

- Corporate/Gov't registration: 350 EUR / 445 USD
- Full registration: 250 EUR / 345 USD
- Student registration: 150 EUR / 205 USD

Late registration fees (after April 15):

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Structure-dynamics relations for networks of spiking neurons - a multifractal approach

Volker Pernice, Stefano Cardanobile, Moritz Deger, Sadra Sadeh, Tayfun Guerel, Stefan Rotter

The study of the relations between structure and dynamics in neural networks has gained much momentum in the last years. Studies of this type often focus on specific network models to derive relations between structural statistics of the underlying adjacency matrix, as degree distribution, degree correlations or spectral radius, and activity statistic, as for example firing rate, synchrony, count correlations, (Riecke et al., Chaos 2007, Gaitieri and Rubin, Frontiers Comput Neurosci (2011), Pernice et al., under review). However, results of this type can be biased by strong correlations between different statistical features of the network model under consideration. The multifractal network generator (Palla, Lovasz and Vicsek, PNAS 2010) offers the possibility of generating network models with much higher variability and can therefore be used to systematically test this type of results in a more general context.

We present results based on an extensive set of simulations of networks of integrate-and-fire neurons. Biophysical parameters and overall connectivity were set to induce an asynchronous irregular state in a random network (Brunel, J Comput Neurosci, 2000).

On the one hand, our results indicate that different connectivity characteristics can induce a large variety of activity regimes. On the other hand, significant relations between structural properties and overall activity statistics might uncover important structural properties not yet investigated in anatomical studies.

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