Donnerstag
27.06. um 16 Uhr
Studentinnen/Studenten
sind herzlich willkommen

Andreas Amann

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"Multifunctionality in Reservoir Computers"

Thursday, June 27rd, 2024, at 4.00 p.m. c.t.
Building C6.4, Lecture Hall II

Multifunctionality is the ability of a system to switch between many different functions. An example of a multifunctional dynamical system is the brain, which is able to learn and perform many different tasks using the same set of neurons. Reservoir computing, on the other hand, is an approach to machine learning which is able to reproduce observed dynamical data by training a single output layer.

The purpose of this talk is to show, how multifunctionality can be realized in reservoir computers by training them to perform many different tasks. This allows us to understand the mechanisms behind the emergence multifunctionality from the perspective of nonlinear dynamical systems.
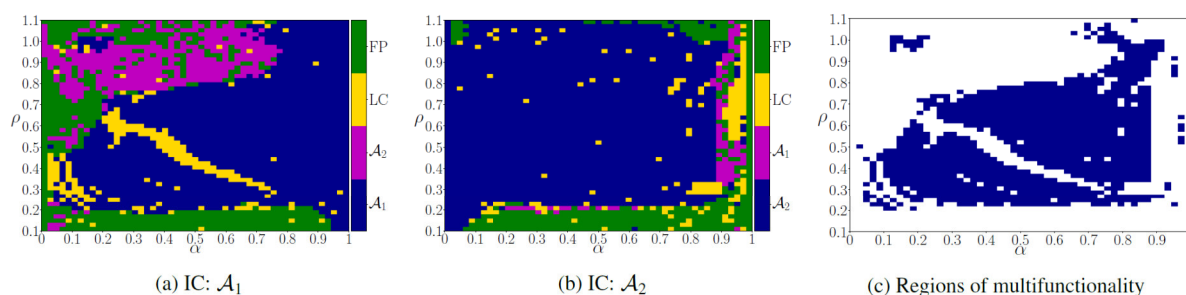

(a) IC: $\mathcal{A}_1$ (b) IC: $\mathcal{A}_2$ (c) Regions of multifunctionality

FIG. 9: (a)-(b):Long-term behaviour of prediction in the (α, ρ)-plane for Case I. Each colour characterises the attractor the RC eventually settles to starting from a particular IC: Initial Condition. (c): Plotted in blue are the regions of multifunctionality.

[1] **Multifunctionality in a reservoir computer**, Andrew Flynn, Vassilios A. Tsachouridis, and Andreas Amann in Chaos **31**, 013125 (2021)

PD Philipp Hövel takes care of the speaker.
You can participate online via TEAMS: https://tinyurl.com/Amann2706

Interested people are cordially invited.

Coffee and cookies are served at 4.00 p.m. in front of the Lecture Hall

Naturwissenschaftlich – Technische Fakultät

PHYSIKALISCHES KOLLOQUIUM