

5th Global Summit on **BRAIN DISORDERS AND THERAPEUTICS**

August 05-06, 2024 | Paris, France

Analysis of the dynamics of neural networks for detection and possible intervention for learning disorders**Maria Isabel Garcia-Planas***Polytechnic University of Catalonia, Spain*

The concept of cognitive control, which is the ability to regulate behavior by selecting necessary information and inhibiting irrelevant data, aligns with the notion of control in dynamic systems theory. This alignment has sparked our innovative use of mathematical methods to delve into the functioning of brain neural networks. When applied to neural networks, the mathematical concept of controllability in dynamic systems can offer valuable insights in a clinical context. This can lead to a deeper understanding of neuronal functioning, aiding in identifying learning difficulties or detecting brain lesions that may be the root cause of calculation disorders.

The neural networks act as a dynamic system. They move between different cognitive states to allow complex behaviors on the mental representations housed in them. From the brain networks, we can estimate control points whose activity can move the brain towards new dynamic trajectories or post-control trajectories, which go through various cognitive functions.

The neural network models suggest that the brain's structural network is controllable, although not easily controllable. That is, changing the trajectory from one state to another from a control point is difficult. However, it must continue to be studied to determine which trajectories are susceptible to control.

Biography

Maria Isabel Garcia-Planas received a PhD in Mathematics from Universitat Politècnica de Catalunya, Barcelona, Spain, in 1995. She joined the Department of Mathematics at the Universitat Politècnica de Catalunya, Barcelona, Spain as Associate professor in 1996. Her work centered on Linear Algebra, Systems and Control Theory, and Neural Networks. She has authored over two hundred papers, having been cited more than 700 times (more than 300 after 2015) and serves as the referee on numerous indexed scientific journals. She has been a plenary Speaker at several International Conferences.