

# **Dynamics and Analysis of Coupled Reaction-Diffusion Neural Networks**

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## **Abstract:**

This talk focuses on dynamical analysis of coupled reaction-diffusion neural networks (CRDNN). Since neural networks are implemented by electric circuits, and the diffusion phenomena inevitably appear in electric circuits once electrons transport in a non-uniform electromagnetic field. It is critical to investigate the diffusional phenomena in coupled neural networks. We will discuss the dynamics such as the stability, synchronization, passivity of the neural networks with reaction-diffusion, and present several effective and powerful strategies such as adaptive strategy for the CRDNN reaching synchronization.



**Tingwen Huang** is a Professor at Texas A&M University at Qatar, an IEEE Fellow. He received his B.S. degree from Southwest Normal University (now Southwest University), China, 1990, his M.S. degree from Sichuan University, China, 1993, and his Ph.D. degree from Texas A&M University, College Station, Texas, 2002. After graduated from Texas A&M University, he worked as a Visiting Assistant Professor there. Then he joined Texas A&M University at Qatar (TAMUQ) as an Assistant Professor in August 2003, then he was promoted to Professor in 2013. Dr. Huang's research areas include neural networks, chaotic dynamical systems, complex networks, optimization and control, smart grid. He was named the Highly Cited Researcher by Clarivate Analytics (2018, 2019). One of his National Priority Research Project was awarded the Best Research Project by Qatar National Research Fund in 2015. Currently, he is the President of Asia Pacific Neural Networks Society (2020).