

## **The Science of Lifelong Learning for Healthy Aging and Wellness**

### **Abstract:**

The Science of Learning is an emerging interdisciplinary field that integrates knowledge from Psychology, Neuroscience, Education, and related fields in Computer Science and Engineering. Its primary aim is to uncover the fundamental mechanisms of learning, which can then be translated into evidence-based interventions to influence learning outcomes. Learning is an ongoing process that remains active throughout an individual's entire life, a phenomenon intricately tied to neuroplasticity — the brain's remarkable ability to adapt and change in response to experiences.

In this presentation, Professor Annabel Chen will delve into how our understanding of neuroplasticity across different life stages can be leveraged to modulate the brain and enhance learning, particularly in older adults. Professor Chen's research team applies the concept of neuroplasticity as a foundational principle for the Science of Lifelong Learning, with a specific focus on active aging and overall well-being. Additionally, she will showcase functional neuroimaging (fMRI) studies that reveal a spectrum of age-related changes associated with neurocognitive aging models, providing essential insights for intervention strategies.

These empirical findings serve as the cornerstone for the development of lifelong learning practices, which can be designed to scaffold and improve neurocognitive health. Ultimately, these efforts are geared towards optimizing the trajectory of active aging and promoting overall well-being.