



Department of Psychology  
The University of Hong Kong

香港大學心理學系

## Departmental Seminar

# Advancing Visual Perceptual Learning: Insights from Data Analytics and Computational Modeling

11:30 a.m. – 12:30 p.m. | February 21, 2025 (Friday)

**Social Sciences Chamber, 11/F, The Jockey Club Tower** | Centennial Campus |  
The University of Hong Kong



**Professor Zhong-lin LU**

Professor of Neuroscience  
NYU Shanghai

### Abstract

Visual perceptual learning (VPL) enhances task performance through training, sometimes improving accuracy from near chance to high proficiency. Given its critical role in optimizing visual and cognitive functions, understanding how perception changes through learning is essential. However, human learning is a dynamic process involving general learning, forgetting, rapid relearning, and adaptation, which are often overlooked due to the coarse temporal analysis used in many studies.

This talk presents findings from a large-scale multi-task VPL study, revealing subject-specific general learning abilities, within- and between-session processes, and interference effects between tasks. To better analyze these learning dynamics, we introduce novel data analytic methods using non-parametric and hierarchical Bayesian models, providing fine-grained insights into human learning behavior. Additionally, new computational modeling technologies allow trial-by-trial fitting of generative process models, enabling predictions of learning performance with minimal training data. These advancements offer a foundation for optimizing training strategies and improving human performance.

The talk will conclude with future research directions, including refining generative models, exploring the impact of component learning processes on classical perceptual learning manipulations, and developing a comprehensive framework to enhance learning generalization and efficiency.

### About the Speaker

Professor LU Zhong-Lin is the Professor of Neuroscience at NYU Shanghai, and a Global Network Professor at the Center for Neural Science at NYU. Professor Lu joined NYU Shanghai in 2019 from the Ohio State University, where he was the College of Arts and Sciences Distinguished Professor of Psychology, Professor of Psychology, Optometry, and Translational Data Analytics, and Director of the Center for Cognitive and Brain Sciences and the Center for Cognitive and Behavioral Brain Imaging. Lu is a fellow of the Society of Experimental Psychologists and the Association for Psychological Science.

### Zoom Meeting (For participants who couldn't attend the Seminar in person)

<https://hku.zoom.us/j/6985555998?pwd=V05yTGJWNTIzazd2OFZ0Q3FRcHVkdz09>

Meeting ID: 698 555 5998 | Password: Psyc

~All are Welcome~

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