De Ocampo Lecture: Smartphone-based Self-screening for Ophthalmic Diseases

Speaker/Awardee: Prof. Haotian LIN (China)

[Plenary Session 1] Celebrating Excellence in Ophthalmology - APAO 2026 Award Lectures
Date: February 5, 2026 (Thursday)
Time: 13:50-14:10
Venue: Convention Hall A-C (L1), Hong Kong Convention and Exhibition Centre
In light of rapid advancements in mobile health (mHealth) technologies within ophthalmology, there arises an urgent need for a comprehensive review of their development and applications.

This presentation outlines a series of smartphone-based ophthalmic disease self-screening systems developed at Zhongshan Ophthalmic Center, Sun Yat-sen University. Leveraging mobile health (mHealth) and AI, these platforms enable non-invasive, real-time screening, diagnosis, and follow-up for a spectrum of ocular and systemic diseases. Key innovations include AI models for detecting visual impairment in children, diagnosing rare ocular surface tumors, and predicting congenital eye disease risk using non-invasive metadata. Integration with IoT devices such as portable slit lamps and fundus cameras extends smartphone capabilities to anterior and posterior segment imaging. A 5G-enabled mobile eye clinic and internet hospital model facilitates large-scale, community-level access, while AI-driven triage enhances referral efficiency. Randomized controlled trials demonstrate improved follow-up compliance and reduced complications. To address privacy concerns, novel de-identification techniques using 3D reconstruction and deep learning ensure biometric anonymity. This economically optimized, urban–rural-adapted “three-tier intelligent service pattern” significantly expands service capacity and accessibility, positioning smartphone-based ophthalmology as a scalable solution for global eye health challenges.