香港浸會大學
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DEPARTMENT OF
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MEDICAL IMAGING-EMPOWERED FULL-STACK INTELLIGENT DIAGNOSTIC AND THERAPEUTIC TECHNOLOGIES FOR OCULAR–BRAIN DISEASES

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10:30 - 11:30 AM

JC3_UG06, JOCKEY CLUB CAMPUS OF CREATIVITY

ABSTRACT

This talk presents our recent work on intelligent diagnosis and treatment of ocular–brain diseases, encompassing medical image analysis, ocular–brain interaction mechanisms, and intelligent ophthalmic surgery. To address challenges in image analysis such as high annotation cost and inconspicuous features, we propose a robust image analysis framework that integrates diffeomorphic deformation with deep learning, which has been applied to brain structural morphology analysis and efficient fundus image annotation. Building on this, we explore ocular–brain multimodal image associations, revealing retinal–brain structural and functional alteration patterns across the Alzheimer's disease spectrum. Furthermore, the talk introduces computational ethology explorations including high-fidelity quadrupedal animal 3D reconstruction, as well as a full-stack intelligent system covering the entire perioperative period of ophthalmology, encompassing an ophthalmic vision–language model, multi-agent treatment planning, a master–slave heterogeneous teleoperated surgical robot, and post-operative image synthesis evaluation. Collectively, these efforts provide new technological support for the early diagnosis and precision treatment of ocular–brain diseases.

SPEAKER'S BIOGRAPHY

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