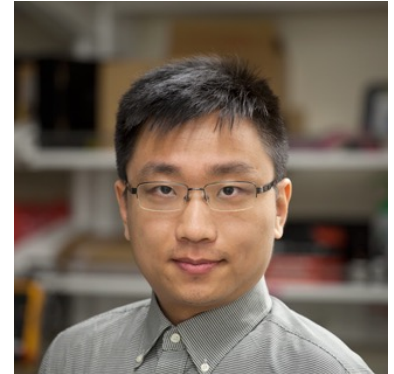


Focused Seminar Series on Statistics and Optimisations in Biological Studies**13 June — 11 July 2016, Level 5 Seminar Room, Enterprise Wing @ UTown, S'138602****Seminar 2: Getting the Best of Both Worlds: Diversity in Imaging Measurements****Dr. Zhengyun Zhang**

Singapore-MIT Alliance for Research and Technology

Date: 20 June 2016, Monday**Time:** 12pm to 1pm**Venue:** Perseverance Room, Enterprise Wing Level 5 @ UTown**Abstract**

Many scientific endeavours benefit from approaches based on different points of view---a particular viewpoint may have some strengths, but it will most likely bring blind spots and other weaknesses as well. Thus, it is not surprising that the quantitative phase imaging problem has spawned a plethora of experimental techniques to capture the spatial distribution of optical thickness in microscopic specimens, and each comes with its own strengths and weaknesses.

This raises the question of whether we can do better than using a single measurement modality, and the answer is: diversity. The concept of diversity arose in the microwave communications literature as a method to combine data sources with complementary strengths and weaknesses to derive a higher quality measurement at the cost of increased computation, which is always decreasing with the progress of computer hardware. In this talk, I'll look at a specific example of complementary phase imaging modalities---wavefront sensing and transport-of-intensity imaging---and combine them into a diverse phase imaging method based on a maximum likelihood framework.

Biography

Dr. Zhang is a research scientist at the Singapore-MIT Alliance for Research and Technology (SMART) Centre in the BioSystems and Micromechanics (BioSyM) interdisciplinary research group. He received his Ph.D. in Electrical Engineering from Stanford University. His research interests are in computational approaches to optics, with particular focus on coherence and phase retrieval, numerical optimization, phase space and three-dimensional display.