



Computational Methods for Assisting Glaucoma Diagnosis



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► Abstract

Glaucoma is the second leading cause of blindness in the world and is characterized by progressive sight damage. Currently, visual field sensitivity (VF) is the principal measure for diagnosing glaucoma and monitoring the progression of glaucoma. VF is obtained by visual field test, which is conducted using the Humphrey field analyzer (HFA). However, the test is very time-consuming and labor-intensive. To achieve a less costly and more efficient diagnosis of glaucoma, we develop computational solutions to calculate VF from retinal layers thickness (RT). These solutions are feasible because glaucoma would make structural changes to retinal layers thicknesses which can now be evaluated accurately with optical coherence tomography (OCT). Currently, there are mainly two scenarios where RT can be utilized. The first scenario is to compute a VF from a RT such that clinical doctors only need to obtain a RT of a patient and then transform it to a VF for the diagnosis. The second scenario is to predict future VFs from both past VFs and RTs, i.e., progression prediction. The progression prediction is for estimating the risk of future loss of sight such that clinical doctors can make informed decisions for medical treatments at the current time.

► About the Speaker

Dr Xu is currently a research assistant professor with the Department of Computing, The Hong Kong Polytechnic University. Prior to that, he was a post-doctoral researcher with the Department of Mathematical Informatics, Graduate School of Information Science and Technology at the University of Tokyo, Japan, from August 2018 to June 2020. He received the B.E. degree in Information Engineering from Beijing University of Posts and Telecommunications in 2013, and the Ph.D. degree from the Department of Computing of The Hong Kong Polytechnic University in 2018. From 2015 to 2016, he visited BDSC lab led by Professor Philip S. Yu in the University of Illinois at Chicago, USA. Dr Xu has broad research interests including data mining, deep learning, and biomedical informatics.

ALL are welcome!

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