PhD position: Medical Deep Learning - Computational Statistics

The National University of Singapore (NUS), Department of Statistics & Applied Probability (DSAP), has an opening for a creative and resourceful PhD candidate with strong deep-learning / machine-learning, programming (Python), and computational science skills. The selected candidate will develop novel methodologies to diagnose glaucoma, predict its evolution, and help understand the disease. This is a joint project between the department of Statistics & Applied Probability (NUS), the department of Biomedical Engineering (NUS), the Singapore Eye Research Institute (SERI, ranked top 5 Ophthalmology institute worldwide), and more than 15 glaucoma institutes from 10 countries across 4 continents. In this project, the candidate will exploit recently developed methods for nonlinear dimension reduction and structure discovery, transfer learning and statistical inference in the low-sample/high-noise regime.

Background: glaucoma is a blinding ocular disorder with no cure that is extremely difficult to detect in the earliest stages and that is characterised by morphologic changes of the optic nerve head tissues. Glaucoma is responsible for 40% cases of blindness in Asia and has a prevalence that reaches 12% among those aged over 70 years. Standard glaucoma diagnosis is complex, expensive and requires time and a battery of multiple clinical tests. In this project, the candidate will exploit a unique large datasets of 3D Optical Coherence Tomography (OCT) of optic nerve heads from healthy and glaucomatous patients.

Qualification: Excellent deep-learning / machine-learning / signal processing, programming (Python), and computational science skills are required. Excellent communication and English-writing skills are also required. No background in ophthalmology is required, however, the candidate will be expected to become knowledgeable in the field of glaucoma in order to interact with clinicians.

Starting Date: August 2018

For more information, please contact Dr Alexandre THIERY at: **a.h.thiery@nus.edu.sg**