

Parallel Sessions

PS12.1 **Big Data Analytic****14:30** **Room 423 & 424**

Rapid Automated Evaluation of Computed Tomography Brain Scan and Prediction for Treatment Needs in Acute Ischaemic Stroke – A Collaborative “Big Data” Approach

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Endovascular mechanical thrombectomy is now an established treatment for acute ischemic stroke caused by large vessel occlusion (LVO). As the majority of ischaemic stroke patients would first undergo plain Computed Tomography (CT) brain scan, it is imperative that signs of LVO on plain CT scans can be identified quickly and reliably so to initiate confirmatory investigations, clinical referral and proper treatment. The objective of the present study is to develop a novel, rapid and automated computer algorithm capable of detecting and predicting signs and likelihood of LVO. The ultimate goal is to generate an effective, reliable and locally relevant platform for triaging acute stroke patients.

Clinical and imaging data are provided by the Hospital Authority. All patients with stroke-related admissions between 2016 and 2017 are included. CT scans of 300 patients are subject to initial screening by a clinical team of Specialist Neurosurgeons to determine the “ground truth” (i.e., the presence of absence of LVO in individual patients). Correlations are made with the clinical course and outcome of the patients in order to determine the actual severity of stroke and the eligibility/need for advanced treatment at the time of admission.

Relevant predictors of LVO including background risk factors, presenting symptoms, neurological assessments and dense MCA sign on CT were identified and fed to the machine learning algorithm for predicting the likelihood of LVO; validity testing will be performed on new dataset to determine sensitivity and specificity, taking into account other clinical parameters and variable. Here we present the developmental process of this novel and landmark collaborative platform as well as some of our preliminary findings.