

Annex – About AimSG and APOLLO

About AimSG

Medical imaging is an important component of modern healthcare delivery. It ensures appropriate screening and diagnosis, enables preventive care and allows appropriate management of diseases. The AI Medical Imaging Platform (AimSG) is conceptualised to enable the rapid testing, validation and deployment of imaging AI models. This open and common platform can support imaging AI models from different sources for various imaging modalities which previously was not possible.

About APOLLO

APOLLO is an AI-powered machine learning software system that provides a comprehensive and streamlined coronary artery disease (CAD) workflow that is able to deliver accurate CT scan interpretations of computed tomography coronary angiographies (CTCA) in under 10 minutes.

Improving First-Line of Investigation Efficiency for Coronary Artery Disease with the APOLLO Software Platform

In Singapore, 23 people die from cardiovascular disease (heart diseases and stroke) every day. Cardiovascular disease accounted for 31.4% of all deaths in 2022.¹ It is the leading cause of death globally, taking an estimated 17.9 million lives each year, representing 32% of global deaths. CAD occurs when the arteries that supply blood to the heart muscle become hardened and narrowed due to build-up of fatty deposits called plaque on their inner walls. As the build-up of plaque increases in size, the insides of coronary arteries continue to narrow and reduce blood flow to the heart muscle; eventually causing chest pain and potentially leading to a heart attack in the case of a sudden, complete blockage.

International guidelines recommend computed tomography coronary angiography (CTCA) as the first-line investigative tool for CAD². However, interpretation of the resultant CT scans is time consuming, generally requiring one to two hours for standard cases and even up to four hours in complex cases for clinicians. With the APOLLO software platform, clinicians can receive the interpretation of resultant CT scans in under 10 minutes. Additionally, the platform utilises AI algorithms and patented post-processing technologies to deliver precise measurements and assessments for coronary calcium scores, epicardial adipose tissue (EAT), stenosis and plaque, which together with the CTCA interpretation, represents a

comprehensive CAD evaluation. With the improved efficiency and comprehensiveness of the platform, hospitals would be able to advise more patients about their CAD risk; allowing them to take the necessary preventive measures and seek the appropriate treatment options.

The APOLLO AI algorithms and models were trained and validated on a large repository of

CT scans containing 5000 patient cases with three million images contributed by the three largest cardiac centers in Singapore, with A*STAR leading the development of its AI algorithms, data-processing technologies, and software platform.

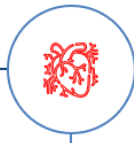
¹ [Heart Disease Statistics | Singapore Heart Foundation \(myheart.org.sg\)](https://myheart.org.sg/heart-disease-statistics)

² [The Updated NICE Guidelines: Cardiac CT as the First-Line Test for Coronary Artery Disease - PMC \(nih.gov\)](https://pubmed.ncbi.nlm.nih.gov/35811111/)

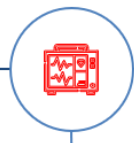


APOLLO

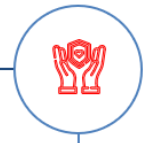
Empowered with AI modules for coronary calcium scores, epicardial adipose tissue (EAT), plaque and stenosis



5-in-1 automated post-processing

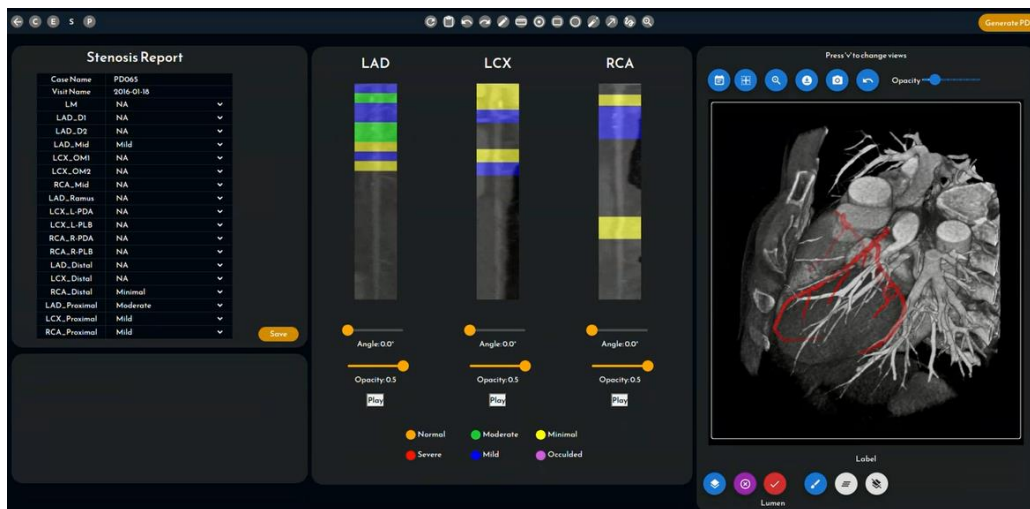


AI primary diagnosis



Check primary diagnosis

AI modules for assessment of coronary calcium scores, epicardial adipose tissue (EAT), plaque and stenosis were developed and integrated for reporting.



Example of AI module for assessment of stenosis visualising the extent of stenosis and compiling the information into a stenosis report for use by clinicians.

The APOLLO software platform was co-developed by A*STAR, Duke-NUS Medical School, Nanyang Technological University (NTU), National Heart Centre Singapore (NHCS), National University Hospital (NUH) and Tan Tock Seng Hospital (TTSH).