Oil Palm Grading System (OPGS)

BACKGROUND
In Malaysia, the palm oil fruit grading is done manually by the labor. It involves a certified tester to take a sample of the fruit bunch and perform visual inspection. However, at a certain time, grading mistakes can be occurred. This is because of the human’s eyes perceive colors differently and this often lead to dispute between graders and sellers. Additionally, the analysis also easily influenced by physiological and environmental factors, inducing subjective and inconsistent evaluation results. These faults lead research on methods to make this system computerized using machine vision based technologies by using the imaging technique. It uses a vision system to perform the inspection and the acquired image goes through a complex algorithm to obtain the result – ripeness of the fruit bunch. The proposed system is fabricated specially to assist the conventional oil palm grading system which uses the imaging technique in getting valuable information regarding the feature of the FFBs. With a closed environment and controlled illumination, a good image could be captured thus analyzed. Color provides valuable information and one of the most significant criteria in estimating the ripeness of the FFB.

PRODUCT FEATURES
Oil Palm Grading System (OPGS) technology couple vision system with machine learning to perform quality inspection to grade fresh fruit bunches. The advantages of using OPGS:
- Increase fruit assessment speed and accuracy
- Flexibility to control the grading strictness of the system and adaptable to the fruit bunch physical variations
- Reduce intensive labours use – cost savings
- Higher Oil Extraction Rate (OER) due to higher input of quality fruits
- Increase net profits by 45 % due to increase in operation hours & oil quality
- Can attain 6sigma standards of quality production in one time that is 99.98% standard

MARKET POTENTIAL
According to MPOB statistic report, oil palm planted area in 2016 reached 5.74 million hectares, an increase of 3.2% as against 5.64 million hectares recorded in the previous year. This was mainly due to the increase in new planted areas, especially in Sarawak which recorded an increase of 4.7%. Meanwhile, Peninsular Malaysia (with 11 States) accounted for 2.68 million hectares or 47% of the planted area. The growth in palm oil industry opens up opportunities for OPGS commercialisation as it brings value and return to the investment made.