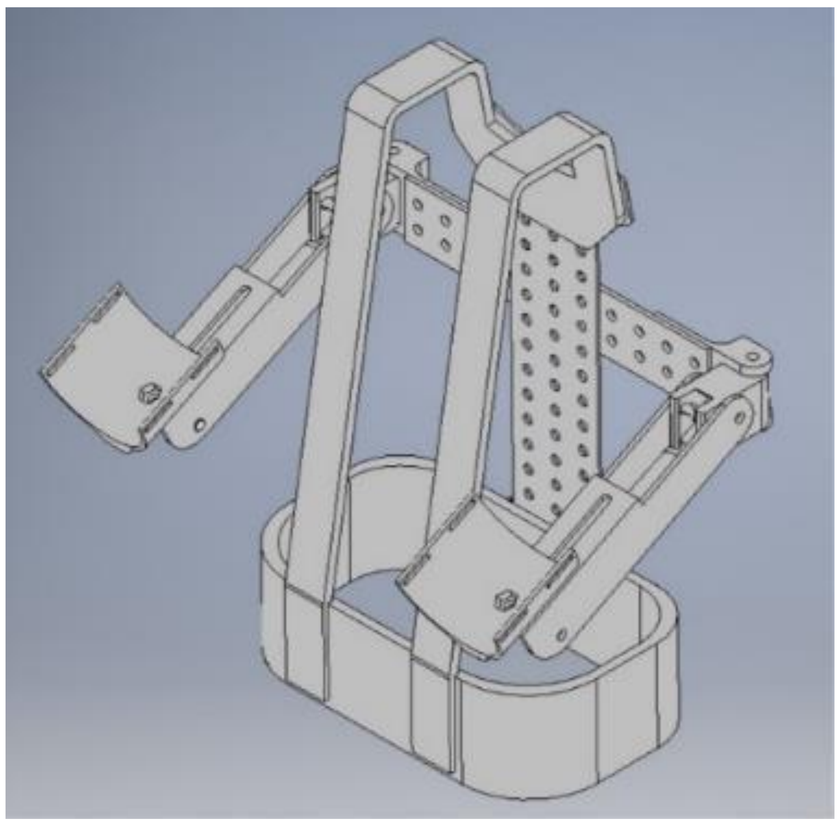
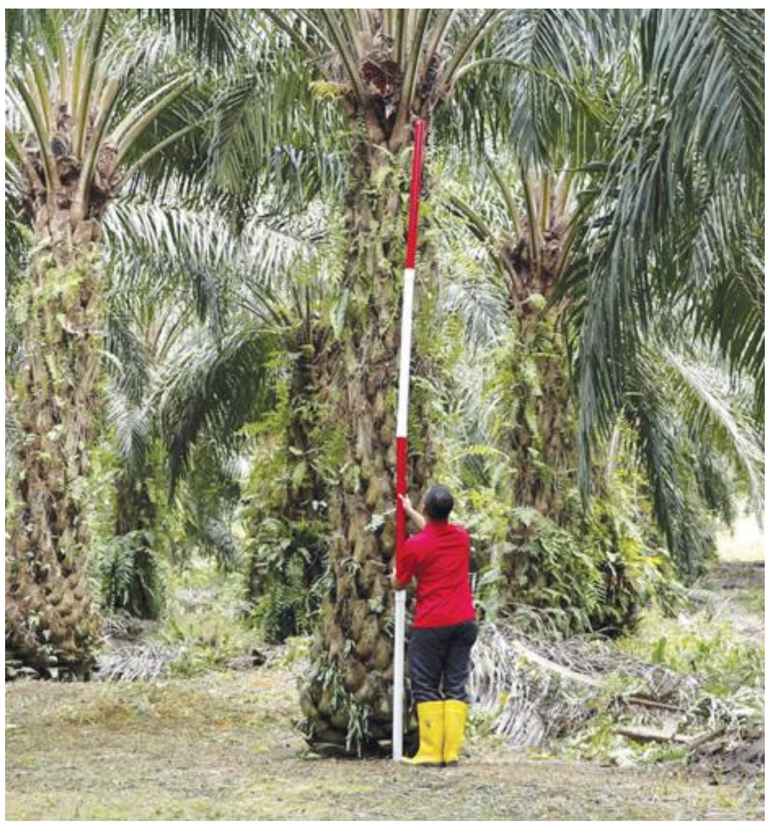
Passive Arm Assist Exoskeleton System

PATENT NO. PI 2019004295





INTRODUCTION OF TECHNOLOGY

Manual oil palm harvesting is laborious and requires eccentric posture, hence its productivity is limited by the physical fitness of the harvester. Fatigue, mainly of muscle, is a major factor that would reduce harvester's productivity.

Manual oil palm harvesting requires harvesters to **lift & carry long**, heavy poles with a sickle attached at the end.

Harvesters spent the longest time **Carrying/Lifting,** where most assistance is needed.

1. Cutting takes only few seconds.
2. Difficulty for lifting is one of the feedback from harvesters especially for taller trees.
3. If harvesters were to use automated cutter (motorized cutter) lifting and handling assistance is still needed.

INVENTION

Passive arm assist exoskeleton system can assist oil palm harvesters during harvesting of oil palm fresh fruit bunch.

1. An exoskeleton with arm lifting assist mechanism.

2. Passive assist mechanism that can be turn on/off without taking the exoskeleton off.

3. Exoskeleton assist the arm when lifting and handling harvesting tool, without interrupting harvesting motion.

4. Composed of spine plate with shoulder and hip harness, links, arm support mechanism assembly, arm cuff.

5. Aim to reduce arm muscle fatigue during tool lifting & handling.

6. Directed support angle allows lifting assist without interrupting harvesting.

MARKET POTENTIAL

Malaysia oil palm plantation covers 5.8M hectares

Industry

- Oil palm harvesting plantation in Malaysia / Indonesia
- Logistics in manufacturing plant / factories / assembly line

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