

# SEMS: RESEARCH PROJECT DESCRIPTION

## 1. Project Background and Description

*A project title and description with clear aims (300 words)*

### **Novel Unmanned (UAS) with Multiple Quadrotors for Precision Agriculture**

*In this project, we aim to develop a solution to the regional labour shortage problem and at the same time to enhance the productivity through the integration of augmenting human intelligence, AI robotics and intelligent sensors.*

## 2. Project Scope

*Three research project objectives*

*The main objective of this project is to*

- 1) develop low-cost integrated multi-agent aerial robotic system linked through an AI based decision module*
- 2) integrate the aerial robotic platform with intelligent sensors and soft end-effector for soft fruit harvesting*
- 3) develop Virtual Reality(VR) based framework for human-augmented teleoperation applicable for monitoring and harvesting tasks.*

## 3. Desired Skills from the Student

*Key skills needed for the PhD project*

- a) Solid understanding of engineering principles needed to design, fabricate, and validate work (Essential)*
- b) Strong background in complex assembly design (Essential)*
- c) Demonstrated computer modeling/computer aided design experience, e.g. Solidworks experience (Essential)*
- d) Basic knowledge and capability in manufacturing processes, both traditional (lathe, mill, casting, etc.) and modern (laser cutter, 3D printing, etc.) (Essential)*
- e) Experience with Matlab, Python, or similar computational environment (Essential)*
- f) The minimum requirement for this studentship opportunity is a good Honours degree or MSc/MRes in mechanical or electronic engineering, or a field closely related to robotics.*
- g) If English is not your first language then you will require a valid English certificate equivalent to IELTS 6.5+ overall with a minimum score of 6 in Writing (Reading, Listening, Speaking).*

## 4. Supervisory Team

*Add supervisory team details*

*Primary: (Name (inc title). **Dr Ketao Zhang***

*Secondary: (Name (inc title)/ department or company if outside SEMS). **Dr Lei Su***

*Additional: (Name (inc title)/ department or company if outside SEMS). **Extend Robotics Ltd***