A Deliverable 1 Report on

Vertical Farm Control System

**CS3500**

**Software Engineering**

Computer Science

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# 1. Abstract

Vertical farms are indoor farms that grow vegetables stacked on the vertical axis. In this manner, more crops can be cultivated on a smaller footprint than in traditional agriculture. The controlled environment offered by an indoor farm eliminates the risk of diseases and insects. Combined with aquaponics it increases 10 times the crop yield compared with traditional agriculture and reduces water consumption by 90% since it is recirculated in the system. Aquaponics means that the roots of the vegetables are placed in water enriched with nutrients instead of soil.

Our team has decided to create a control system for an indoor vertical farm that uses aquaponics. For the sake of simplicity this farm grows butterhead lettuce exclusively but can be extended to manage the environment of other vegetables as well.

*Keywords*: agriculture, energy efficient, environmentally friendly, green farm

# 2. Introduction

## 2.1 Background

# 3. Functions and Requirements

## Functions

## 3.2 Requirements

# 4. Design Diagrams

## 4.1 Use Case Diagram