# Chapter 1
# Intelligent Drones Improved With Algae Algorithm

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## ABSTRACT

*Implement an optimal arrangement of equipment, instrumentation and medical personnel based on the weight and balance of the aircraft and transfer humanitarian aid in a Drone, by implementing artificial intelligence algorithms. This due to the problems presented by geographical layout of human settlements in southeast of the state of Chihuahua. The importance of this research is to understand from a Multivariable optimization associated with the path of a group of airplanes associated with different kind of aerial improve the evaluate flooding and send medical support and goods to determine the optimal flight route involve speed, storage and travel resources for determining the cost benefit have partnered with a travel plan to rescue people, which has as principal basis the orography airstrip restriction, although this problem has been studied on several occasions by the literature failed to establish by supporting ubiquitous computing for interacting with the various values associated with the achievement of the group of drones and their cost-benefit of each issue of the company and comparing their individual trips for the rest of group. There are several factors that can influence in the achievement of a group of Drones for our research we propose to use a Bioinspired Algorithm.*

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## INTRODUCTION

The Cessna 208 Caravan, also known as Cargo master, is a regional jet / turboprop short-range utility manufactured in the United States by the company Cessna. The standard version has 10 places (9 passengers and a pilot), although a subsequent design according to new regulations of the Federal Aviation Administration (FAA) can carry up to 14 passengers. The aircraft is also widely used to make connections in freight services, so that goods arrive at smaller airports are transported to major hubs for distribution as in Figure 1.

The concept of the Cessna 208 appeared in early 1980, the first prototype flew on 8 December 1982. After two years of testing and review, in October 1984, the FAA certified the model for flight. Since then, the Caravan has experienced many evolutions. Hand international logistics company FedEx; Cessna produced first the Cargo master, which was followed by an improved and extended version called Super Cargo master and other passengers called Grand Caravan. Practitioners will be free fall boarding a Cessna 208 in the Dutch island of Texel. Currently Cessna 208B offers different configurations to meet the varied market demand. The core 208 can be supplemented with different types of landing gear and can operate in a variety of terrains. Some adaptations include skis, larger tires for unprepared runways or floats with wheels in the case of the Caravan Amphibian. In cabin seats, can be placed or leave room for cargo in various configurations. The standard configuration of airline consists of 4 rows of seats 1-2 after two seats in the cockpit. This variant is capable of carrying up to 13 passengers; albeit only lead to 4 longer an operation rentable 1. The cabin can also be configured to a low density of passengers, in combination or alone as a freighter. Some versions include an additional compartment at the bottom to increase the capacity or luggage. In the cockpit, the 208 has standard analog gauges with some modern digital avionics equipped with autopilot and GPS, modern radio and transponder. Cessna currently offers two different packages avionics manufacturers, one of Garmin and another Bendix / King, a subsidiary of Honeywell. Routing problems vehicle (Vehicle Routing Problem - VRP) are actually a broad range of variants and customizations problems. From those that is simplest to some that remain today research as in Barbucha (2013). They generally were trying to figure out the routes of a transportation fleet to service a customer, nowadays including aerial transportation. This type of problem belongs to the combinatorial optimization problems. In the scientific literature, Dantzig and Ramser were the first authors

*Figure 1. Type of drone used to our research in Southwestern Chihuahua*