

2019-2020 NASA Aeronautics University Design Challenge

University of California, Davis

Faculty Advisor: C. P. van Dam

Teaching Assistants: Ryan Han, Jared Sagaga

Team: Mercury

Lead:

Christopher Charles - 4th Year Undergraduate

Members:

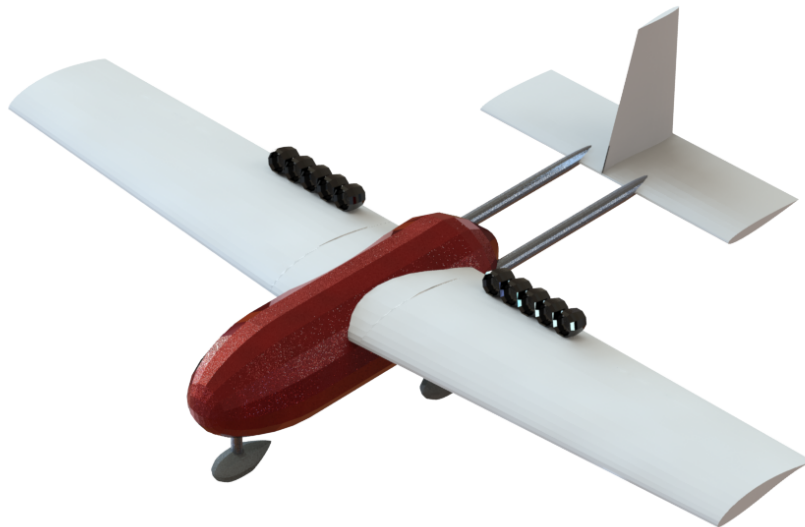
Randa Elhertani - 4th Year Undergraduate

Titus Lee - 4th Year Undergraduate

Selene Pineda - 5th Year Undergraduate

Bao Nguyen - 5th Year Undergraduate

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P34NUT

Abstract

Our designed unmanned aerial vehicle (UAV) P34NUT is fixed wing, with a uniquely designed fully electric distributed propulsion system of 6 motors across the flaps of the aircraft, which was developed to meet and exceed NASA's specifications and objectives of an autonomous UAV capable of flying 40 miles and delivering a 5lb payload in a 6.0in x 6.0in x 6.0in package. Furthermore, our UAV design was designed to compete with current UAV configurations on the market to help efficiently deliver payloads in cities cost effectively, with low noise, and without any human interaction. The P34NUT looks to meet and exceed NASA's standards with a cost effective, unique, low noise, autonomous short take off and landing aircraft that can travel a range of 63 miles to quickly deliver 5lb payloads in the market. Essentially, the UAV has a cruise speed of 63mph (101km/h), with a wingspan of 12.5ft, a wing loading of 1.2 lbf/ft² and a thrust to weight ratio of 0.245. The P34NUT looks to reduce its reliance on fossil fuels by strictly using 6 electric motors that are environmentally friendly compared to existing configurations, and to be easily accessible due to its cost effective nature. All development of the P34NUT has been done in accordance with FAA guidelines to ensure safety and reliability of the unmanned aerial vehicle.