Drone space frame design (Rapid Manufacturing Lab - IIT Bombay)

Objective:

Drone which can be used to provide medical emergency service, can carry a payload of 120 kg. The drone structure must be modular and easy to assemble for ease of transport.

Approach:

• To design To design a cost-effective, lightweight space frame using readily available material to prove the concept.

Solution:

- Drones can be used to reach remote areas in case of medical emergency, or fire, Drones are very useful for defines as well.
- Purpose was to design a lightweight structure that can fly with a payload of 120 kg and house 8 motors, Controls, and Battery Packs.
- Designed lightweight tube structure for drone & also designed fabrication fixture to achieve accurate fabrication of structure.
- Did FEA of different structures to achieve a high strength-to-weight ratio.

My Role:

- Conceptualization
- CAD & Production drawing GD&T
- Structural simulation FEA
- Structure fabrication fixture design
- Manufacturing from vendor

Drone at the Expo:



Drone Structure FEA to increase the strength to weight ratio:





