**Modeling of a Prototype Drone**

Submitted by

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of ENGR 2112B

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**Introduction/Background:**

**I chose to design a prototype of a drone. The drone included 3 subassemblies and used 13 parts including a spider base, spider top, distribution board, spider arm, spinner, spacer, electrical connector, pillar, fan, motor, batterie, and electrical units 1 and 2.**

Description of Design.

I chose this type of design because it covers a large place in the industrial world, so I feel it is essential to study how to design certain models. This model includes 3 subassemblies. First being the electric source which relates to electric units and held together with the distribution board that emits the electricity and spacers and bolts & screws. The Fan Arm subassembly (figure 1) is comprised of motors that is then is connected to a spinner that allows the fan/blade to spin. It is closed off by screws and is connected to the end of the spider arm. The Spider arm is an assembly that includes a pillar to hold the drone when it does not fly, and it includes an electric connector that is used for the electric source. Lastly, the drone body subassembly (figure 4) includes a high-resolution camera that came from 3D content central (Point grey – FL2-08S2M – Flea 2 Camera High Res). It includes the batterie that gives life to this drone and this subassembly is the frame body of the drone.

1

**Description of the Design: (includes all figures with proper headings here.)**

**Fan Arm Subassembly Draw (8 pieces)**

**A drawing of a fan

Description automatically generated**

Figure 1 Fan Arm Drawing Subassembly

**2**

**A computer program with a diagram

Description automatically generated with medium confidence**

Figure 2 Electric Source Subassembly

This the Electric Source Drawing configuring of 5 items

**A blueprint of a machine

Description automatically generated**

Figure 3 Drone body with Camera Subassembly

**This the Drone Body Subassembly made of up 13 parts.**

**The Camera is 3D content central ( Point Grey – FL2-08S2M – Flea 2 Camera High Resolution)**

**Final Model Drawing**

**A drawing of a drone

Description automatically generated**

Figure 4 Final Drawing with Top, Right, Front views.

**3**

**A red drone with propellers

Description automatically generated**

Figure 5 Final Drone

**Steps to building the motor with Pictures**

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

**Make sure you have these units**

**And measurement and you**

**Will do this on the front Plane**

4

**A blue and green drawing

Description automatically generatedThis is the measurement for the bottom right of the drawing**

**A computer screen shot of a computer

Description automatically generatedyou will then revolve the drawing the y axis line**

**A diagram of a circular object with numbers and symbols

Description automatically generatedGo on the top of the motor and draw the following and ensure that the circle are all the same diameter**

**A screenshot of a computer

Description automatically generatedYou then draw the following on the blue and then utilize the circular pattern to have 6 of them evenly separated and then extrude by 6mm**

**A grey round object with a red stripe

Description automatically generated**

**This the completed motor which is essential for the fans of the drone.**

**FEA Finite Element Analysis**

**A blue object with many points

Description automatically generated with medium confidence**

**20 newtons were applied on the spider arm which is made of ASIS 1020 Steel. The force was applied where the blue arrow is at while the fixed was the green arrows.**

**A multicolored metal object with screws

Description automatically generated**

5

**A drawing of a machine

Description automatically generated with medium confidence**

Discussion and Conclusions:

My design is more industrial design of a drone that includes a high-resolution camera with pillars hold the drone in place when it is not flying. The design of the drone took a lot of time because it was not a typical drone. A lot of features were used such as linear and circular patterns. As well as extrude, boss, revolve, loft, sweep.

Conclusion

I started by building a small 2d model hand drawn and eventually got 15 different parts plus. I managed to work on this project with efficient time and learned to use the linear pattern feature more and feel a lot more proficient in using it.

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Future Improvement:

I realized how much time building this project takes and can unitize tricks to be quicker. I will be sure to ask for more help from others or look at tutorial videos that may help with the quickness of doing this project.

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Reference/Citations

High Resolution Camera From Content Central

[3D ContentCentral - Free 3D CAD Models, 2D Drawings, and Supplier Catalogs](https://www.3dcontentcentral.com/download-model.aspx?catalogid=171&id=98278)

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