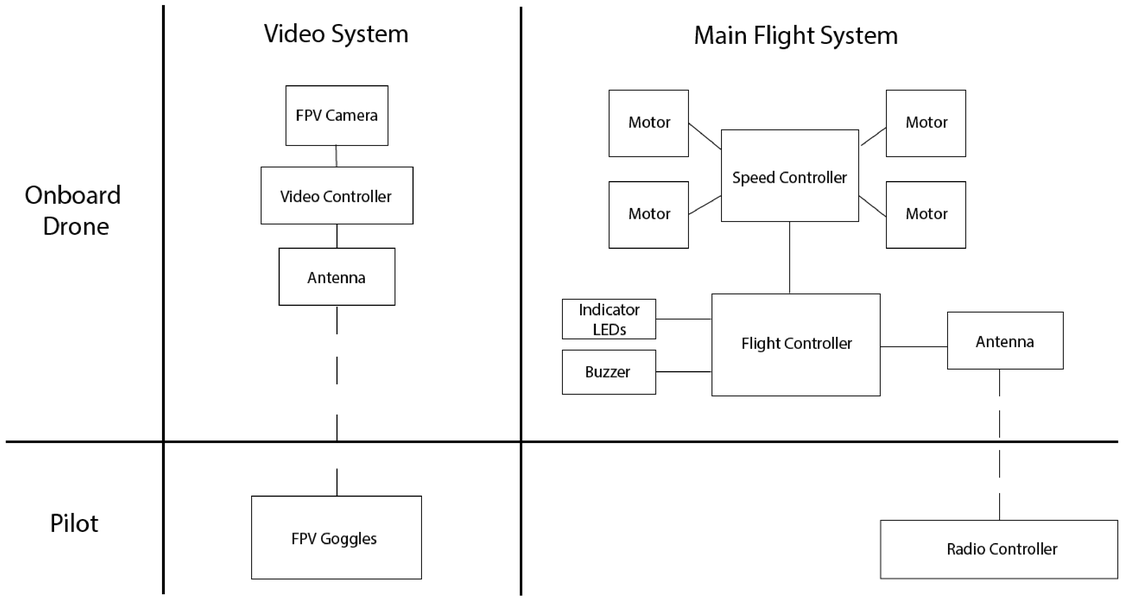
FPV Drone

Project

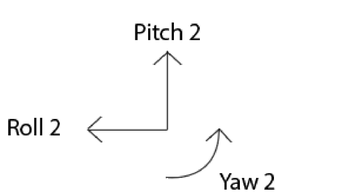
- FPV drones are set apart from normal stabilization drones, such as the DJI Mavic drone line, because of the drones' innate speed and agility. FPV drones are the type of drone used in drone races, capable of flying over 120 mph. The agility of an FPV drone can create amazing cinematography shots by following fast unpredictable subjects, such as derby cars, mountain bikers, or skiers
- The goal of the FPV drone project was to create a fast agile drone capable of cinematography, free-style flying, and drone racing.

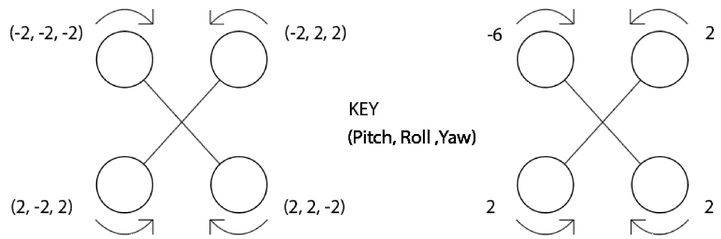
System



Methods

- Unlike most drones, FPV drones lock their rotation in the sky instead of their position in the sky. To change rotation a vector is created using pitch, roll, and yaw.
- Each stick position contributes to the rotation vector. The drone then increases or decreases motor speeds to rotate to the desired rotation (shown below).

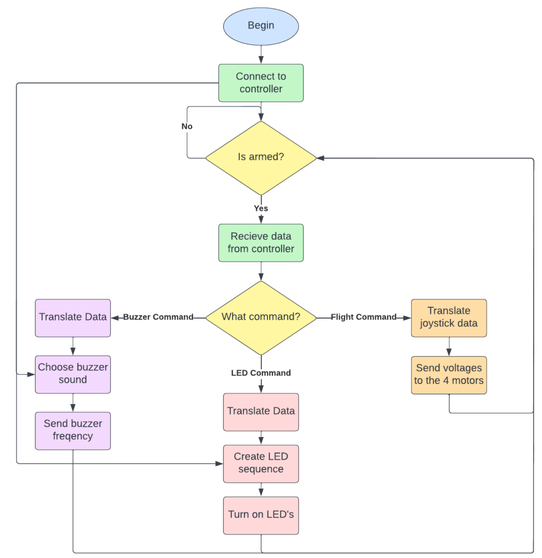




* Pitch, roll, and yaw values are relative to the current thrust speed

Conclusion

- Two of the main objectives for the FPV drone project were to program the flight controller of the FPV drone and relay live video while operating.
- The FPV drone project completed both objectives, allowing the pilot to control the drone while watching live video in the DJI goggles.



Software Diagram

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Special thanks to USU's ECE department