

ABSTRACT

Digital systems are widely used in ship component control applications, one of which is ship surveillance cameras, ship surveillance cameras must be made as stable as possible against the horizon to take accurate images, but camera stabilization is disturbed by ocean waves.

This camera has 1 camera lens that is driven by a Stepper Motor, and has 2 angles of movement, namely pitch and yaw, both input angles and directions are processed on the microcontroller for processing control signals using the FLC (Fuzzy Logic Control) method and generate motion signals to move and perform stabilization for 2 axes for precision in pointing at the desired object angle. From the output point of view of the camera, if it is not stable, it will be detected by the IMU's feedback sensor in the form of a gyroscope sensor, accelerometer sensor, and compass after which the microcontroller will process it again until the appropriate results are obtained.

This design produces a system that can integrate the IMU sensor on the 0 COG (Center of Gravity) axis of the camera, with an accuracy of $\pm 0.1268^\circ$, then the stability system using fuzzy logic gets a steady-state error of 3.688° . By using VnC and remote WiFi the system can receive 100% motion command input but with a 3 second delay and the gimbal system can do angle sweeps of up to $0^\circ-180^\circ$.

Keywords : 2-Axis camera, stability, Fuzzy Logic controller, IMU