

## ABSTRACT

In the daily life of the mirror is one of the human needs to improve the look of self. Various problems arise when the mirror is mainly on the medium or small size mirror. In general, someone reflects to repair or check the condition of the face area on a medium or small mirror. With each person's height difference, medium or small-sized mirrors permanently attached to a place or wall create a problem: the area of the face is not visible for a person too short or too high.

With this final project made a medium or small mirror that can adjust to high with users. The use of microcomputers as the brain on the tool, the camera to detect the face and motor area to move the mirror to the face area is visible on the mirror. Added also LED for lighting at the time of mirror enough. To know the facial area required a camera and image processor that can detect the face area and needed algorithm for the mirror right in the face area with sufficient lighting.

When user PIR detection, the LED is on and the smart mirror starts scanning from top to bottom. Once the face area is detected the smart mirror stops. The speed of the smart mirror is 3.083 cm / s when scanning the face area. The limiting switch is placed at the top dead and bottom dead points. When the upper bounding switch is depressed the mirror rotates direction and vice versa. The solenoid is placed to stop the rate of the smart mirror when the face area is detected and is inactive for safety so that the mirror does not fall.

**Keywords:** *Microcomputer, DC Motor, PIR, Image Processing*