# CALCULATING SHORTEST TIME TO DIRECT MONITORING CAMERA TO SUSPICIOUS FLYING OBJECT

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The diverse capabilities of drones have made them increasingly prevalent for use in areas of military tension, particularly along national borders. Their adaptability and range of use in these conflict zones underscore their growing significance in modern warfare and surveillance. To safeguard against the potential risks presented by unmanned aircraft, it's essential to employ a range of surveillance technologies across border areas, enabling the timely detection of any objects that could pose a threat. These measures are vital in maintaining the integrity of national boundaries and ensuring a proactive defense against any unidentified aerial incursions (for example, [1-3]). One of the important issues here is to be able to direct the monitoring camera towards this object as soon as possible in order to be able to track the object when a suspicious flying object is detected by the monitoring camera in the border zone [4].

In this research, a mathematical model was proposed to calculate the shortest time for the video camera to be directed to the object when a suspicious object is detected in the border zone monitored by video cameras.

**The proposed method** is based on the equations of motion of both the potentially dangerous flying object and the tracking camera. So, as a rule, the object of flight to the border zones moves in a straight line at a uniform speed, so it is possible to identify the equations of motion of the object based on the observation data. The motion equations of the tracking camera and the parameters determining its position at the initial moment are also known. Based on these data, a mathematical model of the problem of aiming the camera at the aircraft in the minimum time was built. The numerical solution of the problem is carried out by an iteration procedure. This procedure is realized by evaluating the functional representing the current and target state. From here, the shortest time T to aim the camera at the target is found.

**References**

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