UAV-BASED TARGET DETECTION AND SMART STRIKE GUIDANCE USING VIDEO ANALYTICS

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This section focuses on the development of onboard intelligent visual processing systems for target detection and guidance in UAV (Unmanned Aerial Vehicle) operations. Specifically, it addresses the recognition of targets such as enemy personnel silhouettes and combat-related indicators using real-time video feed from UAV-mounted cameras. The objective is to design algorithms and software modules that enable UAVs to autonomously detect, identify, and track targets during missions. To achieve this, a comprehensive database of silhouette templates observed from multiple angles must be created. The identification module will apply artificial intelligence (AI) techniques, including pattern recognition and neural networks, to detect potential targets based on live video input. Moreover, a precise target guidance system must be developed to ensure UAVs navigate directly toward detected targets. This system continuously analyzes deviations between the target's image and the camera's visual center. The onboard AI processor recalculates flight paths in real-time to minimize this deviation, keeping the target fixed in the center of the frame until the UAV reaches the optimal striking distance.

The integration of target recognition and dynamic guidance mechanisms significantly enhances the UAV's capability to execute autonomous strike missions with high precision, reducing the need for operator intervention and increasing mission success rates in complex battlefield environments.

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