

夜视技术

扫描型红外成像系统仿真及TOD曲线预测方法研究

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摘要 针对实际三角形方向鉴别(TOD)阈值温差测试的数据量大、时间长,以及测试结果常具有不稳定和不确定性等问题,提出一种扫描型红外成像系统效应仿真。建立了红外成像系统性能预测仿真平台,并对靶标效应图进行人眼判定。根据人眼判定结果对神经网络进行了训练。由基于BP神经网络的TOD阈值温差预测方法判定仿真样条的方向,统计正确的判定概率,实现TOD曲线的预测。实验结果表明:该方法预测的TOD曲线与实际测量的TOD曲线具有很好的一致性。

关键词 [红外成像系统](#) [BP神经网络](#) [三角靶方向机器视觉判定](#) [性能预测](#)

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IR imaging system simulation and TOD prediction

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Abstract To overcome mass data, long duration, instability and uncertainty in the test of triangle orientation discrimination (TOD), a simulation method for IR scanning imaging systems is presented. A simulation platform for predicting IR imaging systems performance was established, and the triangle pattern images were discriminated by human eyes. According to the results, training was carried out for the neural network. Based on the predictive method of TOD by the neural network, the direction of the simulation spline is discriminated, the correct discrimination probability was obtained by utilizing the statistical method, and the TOD prediction curve is achieved. Experimental results show that the predicted TOD curve is consistent with the measurement.

Key words [IR imaging system](#) [BP neural network](#) [triangle orientation discrimination \(TOD\)](#) [performance prediction](#)

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