

系统工程

BP神经网络在光学相关器相关峰识别中的应用

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摘要 光学相关识别是图像识别的重要方法, 有效识别相关器输出平面的相关峰信号是保证光学相关器图像识别准确性的关键。由于激光器输出功率的波动、光学系统本身的误差以及SLM器件本身带来的噪声, 采用一般的阈值方法很难达到理想的效果。该文提出对相关器的输出平面进行预处理, 充分考虑相关信号的形状信息, 提取感兴趣区域(ROI), 采用BP神经网络对输入矢量进行计算, 可达到对相关峰信号和噪声的有效分类识别, 从而提高了光学相关器识别的可靠性, 降低了误判的概率。

关键词 [光学相关器](#) [神经网络](#) [感兴趣区域](#) [相关峰识别](#)

分类号

Application of BP neural network in correlated

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Abstract Optical correlated recognition is one of the important methods in image recognition applications. For optical correlator, to effectively recognize the peak signal of correlated output plane is the key factor to ensure the accurate image recognition. The traditional threshold method can't achieve satisfactory results due to the output power fluctuation of lasers, errors from optical systems and noise inherent in SLMs. The author proposed that, in order to effectively classify and recognize the correlated peak signal and noise to improve the performance of the optical system, the output plane of the correlator should be preprocessed, the shape information of correlating signal should be well considered, the ROI (range of interest) should be extracted and the BP neural network should be adopted to calculate the input vector. The result shows that the proposed method can improve the reliability of the correlator and reduce the possibility of misjudgments.

Key words [optical correlator](#) [neural network](#) [ROI](#) [correlated peak recognition](#)

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