

基于 Matlab 的图像分割技术研究与实现

摘 要

图像分割技术简单来说就是将我们需要提取的目标和背景区域分类，它们一般都保有各自区域的特征以此与其他区域区别。图像分割在需要图像处理的领域发挥着越来越不可替代的作用，在交通、工业自动化、军事、通信、遥感图像分析等领域得到了广泛的应用。同时，此技术研究出的最终图像效果的优劣将对之后的进一步图像操作造成巨大影响。

本文将对阈值分割技术进行初步的研究，通过 Matlab 算法的演算分析其技术优劣。首先介绍图像分割原理、方法；其次详细介绍全局阈值、局部阈值两种常用阈值图像分割算法；之后对两种分割算法分别进行 Matlab 仿真，仿真表明两种算法分别具有各自优缺点及适用范围，都能完成图像的有效分割。

关键词：数字图像处理；图像分割；阈值分割

Abstract

Image segmentation technology is simply to classify the target and background regions that we need to extract. They generally retain the characteristics of their own regions to distinguish them from other regions. Image segmentation plays a more and more irreplaceable role in the domain of image processing, and performs a significant role in transportation, industrial automation, military, communication, remote sensing image analysis and other domains. In the meantime, the virtues and shortcomings of the final image effect of this technology will have a huge impact on the further image operation.

This paper focuses on image processing techniques and builds a simulation laboratory based on thresholds and algorithms. First, we will analyze how image segmentation works and how to use this technology; secondly, two typical threshold image segmentation algorithms, global threshold and local threshold, are introduced in detail; then, the two threshold image segmentation algorithms are simulated by MATLAB respectively, and the simulation shows that the two algorithms have their own advantages and disadvantages and applicable scope, and can complete the effective image segmentation.

Key Words: Digital image processing; image segmentation; threshold segmentation

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