

论文

一种基于图像处理的舌象采集自动调焦算法

韦玉科¹, 李江平², 段仰广¹, 卢博生¹

广东工业大学 1.计算机学院; 2.材料与能源学院, 广东 广州 510006

摘要:

为快速准确地采集到清晰的舌图像,必需智能调整并控制摄像镜头与舌体的位置。提出了影响图像质量的因素,如清晰度、反光比、对中性、阴影比、光照条件、焦距等,以及在调整镜物位置时用到的调焦的方法,并与调焦技术相结合,建立了适合图像质量与镜物距离之间关系的数学模型。自动对焦的过程就是运用爬山搜索算法求取对焦评价函数最大值的过程。传统的爬山搜索算法会受到对焦评价函数局部极值的干扰而不能准确对焦,本研究对每一帧图像先进行预处理,然后采用先粗后精两步法,有效地排除了这种干扰。用VC++6.0编程实现了自动调整采集设备获取质量最佳图片的过程。试验结果表明此方法具有快速、抗干扰强、精确等特性。

关键词: 自动调焦 二次曲线拟合 爬山搜索算法 调焦评价函数 图像预处理

An auto-focus algorithm for the tongue image acquisition based on image processing

WEI Yu-ke¹, LI Jiang-ping², DUAN Yang-guang¹, LU Bo-sheng¹

1. Faculty of Computer; 2. Faculty of Material and Energy Sources, Guangdong University of Technology, Guangzhou 510006

Abstract:

To rapidly and accurately acquire a clear tongue image needs adjusting and controlling of the distance between camera and the tongue. This paper elaborated the factors that influence image quality such as clarity,light reflection scale,shade scale,illumination condition and focal length and the focusing method used in adjusting the position of lens and subject. Combined with the focus technology, this paper established a mathematical model of the relation of image quality and distance of lens and subject. The procedure of auto-focus was the acquisition of the maximum value of the focusing evaluation function employing the mountain climb searching algorithm. Unlike the traditional mountain-climb searching algorithm which was apt to disturbed by the local extremum, introduced an algorithm that preprocessing each frame of image firstly and using the two step method of rough before precision, which effectively get rid of this disturbance. It has realized by using VC++6.0 program to automatically adjust the acquisition machine to acquire the best quality picture. Experiment results showed that this method was fast, precision, strongly anti-interference and other good characteristics.

Keywords: auto-focus conic fitting algorithm mountain-climb searching algorithm focusing evaluation function image pre-processing

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通讯作者:

作者简介: 韦玉科(1965-),女,广西荔浦县人,副教授,博士,硕士生导师,主要研究方向为智能信息处理,智能控制与检测,图像处理,模式识别,网络监控.E-mail:weiyuke@gdut.edu.cn

作者Email:

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