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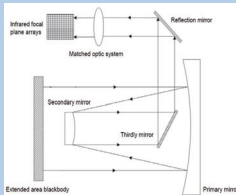
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本期封面图片由重庆大学武志翔(170660)提供

Contents

Article



Compensation of gray value drift for ground-based MWIR measurement system 170535

Zhao Yun, Li Manliang, Cui Zhi, Sun Jingang, An Xueguang

By investigating the dependence between the ambient temperature with the output gray value of infrared system, the law of gray drift with ambient temperature was summarized, the reason of gray drift was found, the relationship between ambient temperature and gray drift was deduced, and a method based on ambient temperature was proposed to compensate the gray value drift.

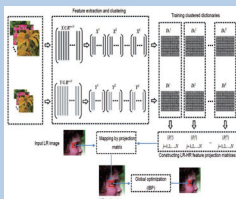
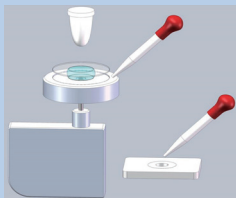


Image super-resolution based on clustering and collaborative representation 170537

Wang Ronggui, Liu Leilei, Yang Juan, Xue Lixia, Hu Min

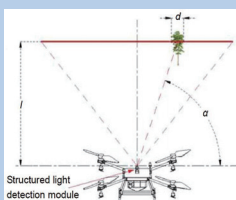
An image super-resolution algorithm based on collaborative representation and clustering was proposed in this paper. Compared with other methods, the proposed method not only enhanced PSNR and SSIM metrics for reconstructed images but also improved images visual effects.



Design of non-invasive skin cholesterol detection system based on absorption spectroscopy 170587

Xu Chao, Fang Zhaohui, Dong Meili, Zhang Yuanzhi, Ni Jingshu, Wang Yikun, Zhu Lin, Wang Lin, Liu Yong

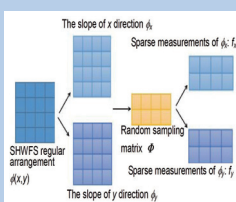
Using STM32 microprocessor, a non-invasive skin cholesterol detection system based on absorption spectroscopy was designed. The relative cholesterol content of human skin was indirectly obtained by absorption spectrum information of colored products which was detected by micro-spectrometer.



Detection method of obstacle for plant protection UAV based on structured light vision 170613

Wu Kaihua, Wang Wenjie

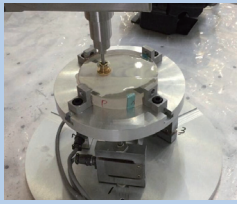
Based on the laser triangulation principle, through the special optical path design between the semiconductor laser and CCD sensor, an optical detection system to detect front obstacle information was designed.



Research on reconstruction of atmospheric turbulence wavefront compressed sensing measurement 170617

Li Can, Cai Dongmei, Jia Peng, Liu Jianxia, Li Juanjuan

Based on the SL0 algorithm, a subregion parallel algorithm—Block-Smoothed L0 Norm (B-SL0) was proposed which can quickly and accurately reconstruct the signal by measuring the wavefront slope signal in subarea and parallel operations through theoretical analysis and simulation experiments.

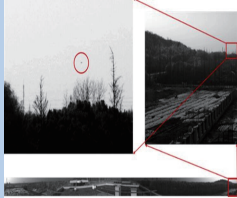


Study on the variable pressure CCOS polishing technology

Ye Fengfei, Yu Deping, Wan Yongjian, Liu Haitao, Zhao Hongshen

170642

The variable pressure CCOS polishing technology was studied. One more degree of freedom was added to the polishing process, in which the desired amount of material to be removed is controlled by both the polishing pressure and the dwell time.

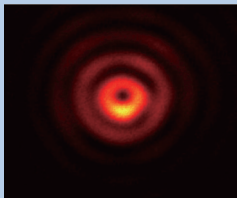


An optoelectronic system for fast search of low slow small target in the air

Xi Yuding, Yu Yong, Ding Yuanyuan, Li Yan, Zeng Linghui, Tang Zhenghong

170654

On the development trend of opening low altitude airspace in our country and the protection requirements for key areas, combined with the latest optoelectronic technology, a fast search method to detect low slow small target for low altitude airspace was presented, and a set of prototype system was developed.

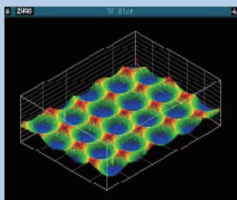


Binary-amplitude modulation based super-oscillatory focusing planar lens for azimuthally polarized wave

Wu Zhixiang, Jin Qijian, Zhang Kun, Zhang Zhihai, Liang Gaofeng, Wen Zhongquan, Yu Anping, Chen Gang

170660

To overcome the disadvantages of conventional optics, including bulky size and difficult for integration, a binary-amplitude (0, 1) super-oscillatory planar lens is designed for sub-diffraction focusing of azimuthally polarized wave at wavelength of 632.8 nm.

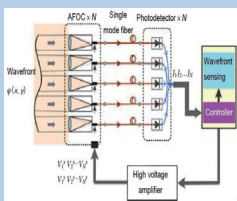


Fabrication method of quartz aspheric microlens array for turning mask

Wang Hao, Dong Lianhe, Zhu Guodong, Zhang Dong, Zhang Weiguo

170761

In order to solve the two difficult problems of the poor processing controllability and the low surface accuracy of quartz aspheric microlens array processing, a fabrication method of quartz aspheric microlens array for turning mask was proposed.



Wavefront sensing based on fiber coupling of the fiber laser array

Li Feng, Geng Chao, Huang Guan, Yang Yan, Li Xinyang

170691

A new method of wavefront sensing based on fiber coupling in the fiber laser array was proposed. The scheme and the recovery process of this sensor were introduced. Numerical simulation of detecting the turbulence-induced aberrations utilizing such method and experiment of recovering static aberrations with 7-element adaptive fiber optics collimator (AFOC) array were presented.