

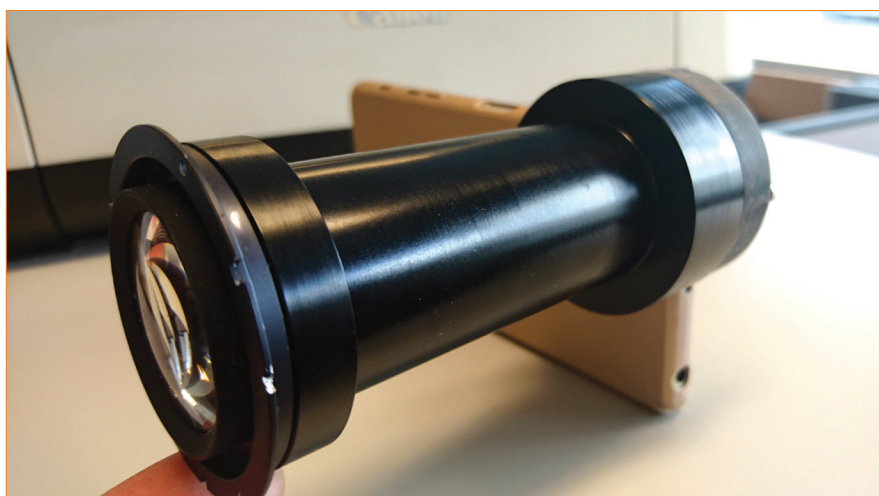
全聚焦光場相機的智能三維成像系統

Intelligent 3D Stereoscopic Imaging System on Plenoptic Camera

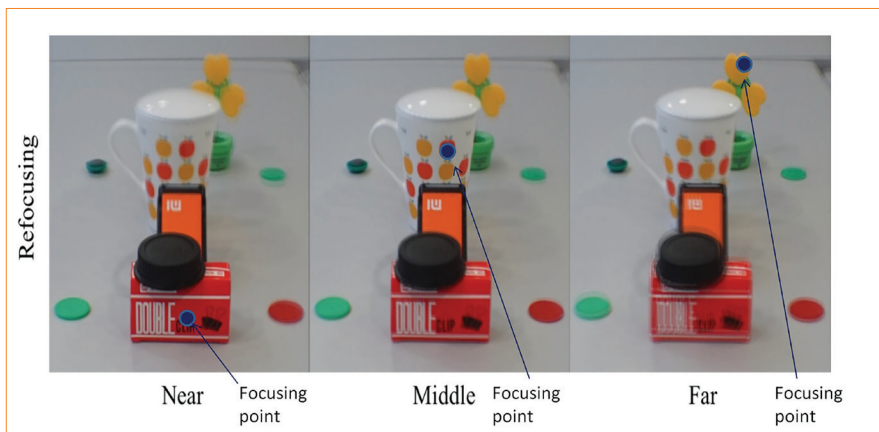
獲取目標景物的真實三維位置信息以實現立體成像及顯示

Obtaining real 3D position information of target scene for 3D stereoscopic imaging and Display

目前，大多數3D影像其實是由2D影像組合而成的，質素有欠理想。理大的三維成像系統具備設計先進的反射單元及分為九份的感應器。只要把系統安裝於全光學相機上，按一下快門便能捕捉同一景物的九個影像，而每個影像都記錄了景物稍微不同視角的場景及深度圖信息；經過電腦的影像處理和運算後，便能產生高質素的3D影像。



安裝於智能電話上拍照3D影像
Install on Cell Phones to Capture 3D Images



數碼對焦圖列
Digital refocusing illustration

Most 3D pictures and videos are constructed from 2D frames. The quality of such simulated images is usually far from satisfactory. Our 3D imaging system has an internal reflection unit and a sensor that is divided into nine parts. When attached to a plenoptic camera, the system can capture nine images of an object onto different parts of the sensor in a single shot. Each of the nine images records a slightly different perspective of the scene and its depth map information, which can be used to generate a high quality 3D image or video through image processing.

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專利編號: CN201611036642.2 (中國), CN201510811019.9 (中國)

特色與優點

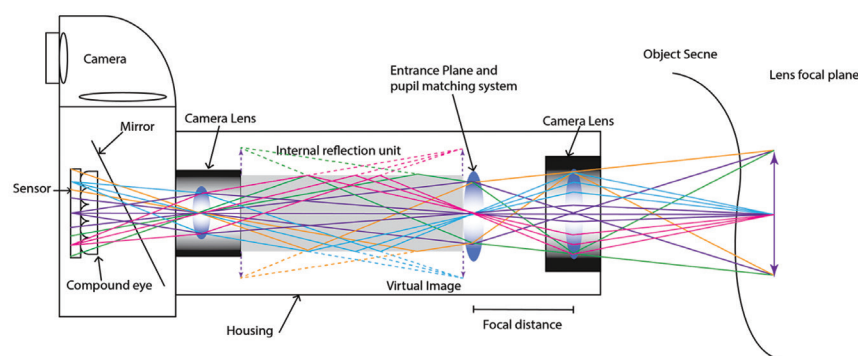
- 實現目標景物的高質素無損成像
- 解決目前成像技術中因光線不足、分辨率不夠或因因子圖像相互干擾等因素所導致的成像失真問題

應用

- 高精度外形檢測裝置、超高像素專業攝影器材、衛星航天相機等
- 只具備單一鏡頭的智能電話或平板電腦

獎項

- 中國光學工程學會科技創新獎 - 創新技術二等獎 (2017)
- 第46屆瑞士日內瓦國際發明展 - 評判特別嘉許金獎 (2018年4月)



光線於系統反射單元內的路線
Optical path of the system with reflective reflection unit

Patent No.: CN201611036642.2 (China), CN201510811019.9 (China)

Special Features and Advantages

- Achieves high quality and non-destructive imaging with one single shot
- Solves the problem of image distortion caused by insufficient light, insufficient resolution or mutual interference of factor images with current imaging technology

Applications

- High-precision shape detection devices, ultra-high pixel professional photographic equipment, satellite space cameras, etc
- Mobile phones, tablet PCs with a single camera for image capture

Awards

- CSOE Innovation Awards – Second Prize (2017)
- Gold Medal with the Congratulations of Jury – 46th International Exhibition of Inventions of Geneva, Switzerland (Apr 2018)



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