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PRESS RELEASE
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Mirrorcle unveils and updated 3D Sensing and Metrology Demonstrator Kit (DEMO-08)

Mirrorcle first introduced the 3D Sensing Demonstrator Kit DEMO-06 in 2019, integrating the high-performance beam-steering MEMS Mirrors in an optical scan module and a USB camera to perform 3D measurements. Recently we updated the system using a new generation of MEMS Mirrors with high-speed scanning and increased field of view. Furthermore DEMO-08 has improved optical assembly with a 405nm laser module and lower divergence for highly precise and programmable illumination with narrow high-contrast lines. Finally, a higher resolution USB camera with high frame rate completes this upgraded, compact, and portable demonstrator.

Mirrorcle has been consistently delivering MEMS mirrors into the 3D Sensing and Metrology segment for over two decades, and this was the motivation that led to a comprehensive reference / demo design to enable customers globally to create related products. The ability to fully program laser illumination in 3D scanning systems is a major advantage as the industry continually moves toward more exhaustive in-line inspection practices on active assembly lines. Also, production assemblies are continually increasing in speed at inspection points to maintain the high throughput and efficiency. With Mirrorcle's offering of fully programmable illumination, these laser beam steering solutions provide the camera vision system with precise and high contrast data which can be programmably structured over the exact areas of interest.

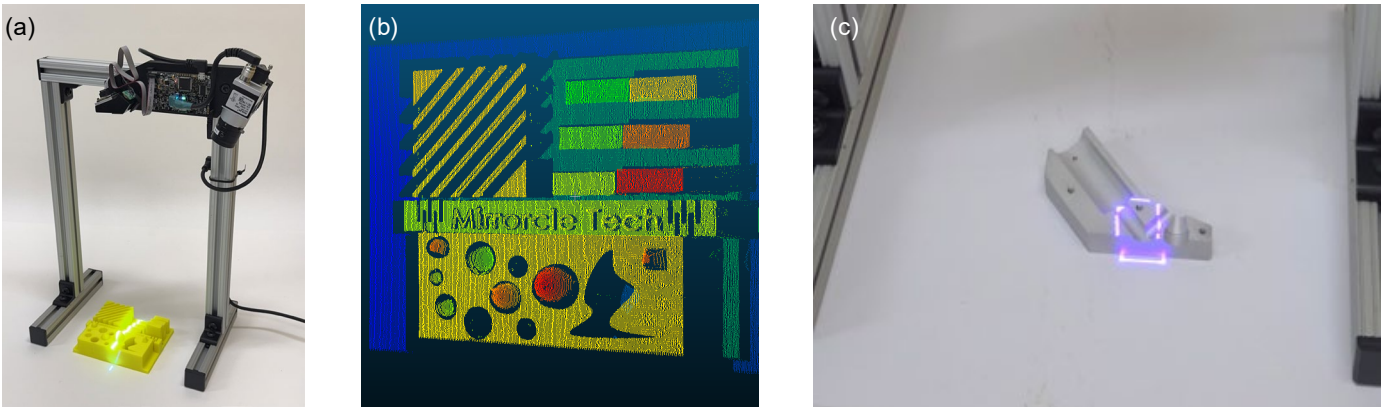

Figure 1: (a) The DEMO-08 setup scanning a 3D printed test structure used to showcase the capabilities of the system, (b) a 3D point cloud of the scanned plastic part, (c) Example of a brushed Aluminum metal part that was scanned and defect highlighted using the VGLP (Vector Graphics Laser Projection) mode.

Typical requirements today come in with a 3D Metrology system requiring >200 scan lines per feature to be inspected, with the ability to control over the scan lines size, line density, frame rate, direction and orientation for optimizing the measurements and feature detections, all while maintaining resolutions of 10um-100um within the scanned FoV. All these requirements are met with the latest

MEMS Mirror designs from Mirrorcle's A7Mx and A9Mx series, which prompted for an update for the demonstrator kit and reach out to the next generation of 3D metrology customers.

For compactness and portability, the demonstrator kit is assembled onto a simplified 3D printed mount, housing the MEMS Mirror Scan Module and control electronics, and the USB Camera. The housing is mounted onto aluminum brackets-based frame for a tabletop 3D scanning solution, or simply can be used as a handheld solution with a single USB connection and power cable.

The software and API have also had improvements in recent years, enabling users to have full reconfigurability on the scanning for 3D sensing as well as projecting vector graphics over the same FoV to address any anomalies detected within the imaged parts. The overall demonstrator kit would enable users to have a plug-and-play system into a production line that can generate 3D point clouds of scanned parts, compare to existing 3D CAD models, identify parts out of spec, and highlight them specifically within the FoV. The end user can further integrate this solution into their existing assembly line or inspection processes to image plastic, metal, ceramic parts for validation, mechanical fit, and much more. We target industries that would require 3D Metrology, Industrial and Commercial 3D Scanning, Mapping and Biomedical Imaging customers with this product.

The kit is designed to demonstrate the capabilities of Mirrorcle's MEMS mirror and controller with simple Windows based applications to provide Programmable Illumination for 3D Scanning applications. Users may programmatically steer a laser over a field of regard of ~34° x 34° and more. In conjunction with the camera it offers additional capabilities of imaging and 3D metrology of objects in camera's field of view with a laser.
The new 3D Scanning Demonstrator Kit is available immediately for customers and was recently showcased at the Mirrorcle booth #4005 at this year's Photonics West exhibition. For detailed technical specifications, datasheets, and information on how to integrate these solutions into your designs, please visit us there, contact our sales team (sales@mirrorcletech.com).

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About Mirrorcle Technologies, Inc.

Mirrorcle Technologies, Inc., founded in 2005, is a private California corporation that commercially provides products and laser systems based on its proprietary optical microelectromechanical system (MEMS) technology. Since its founding, and supported by its continuous investment in R&D, the company has been offering the world's fastest point-to-point (quasi-static) two-axis beam-steering MEMS Mirrors, as well as resonant-type micromirror devices with video rates. Mirrorcle is globally the only provider of tip-tilt MEMS actuators in combination with mirrors from submillimeter to several mm in diameter, offering customers a wide selection of specifications to optimize their paths to successful commercialization. Mirrorcle products can be found today in 3D metrology systems, biomedical imaging systems, solid-state LiDARs, AR/VR prototypes, laser projectors, and classrooms. Mirrorcle's system solutions include the world's most compact vector graphics laser projectors and 3D LiDARs.
Mirrorcle maintains multiple cleanroom laboratories at its Richmond, California headquarters, and year-round, 24-7 access to a wafer-based CMOS and MEMS fabrication facility. Beyond its own facilities, the company has established high-volume manufacturing with leading MEMS wafer foundries and qualified opto-mechanical assembly houses.