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Novel Calibration Method for Structured Light System Using a Telecentric Lens

A new method for high-precision 3D measuring utilizes a structured light system and a telecentric lens to achieve extreme accuracy at the micrometer scale for applications like 3D printing and computer part manufacturing.

The recent development of precision manufacturing in various industries has produced a need for improvements in 3-D measuring at the microscopic level. In order to make measurements at this level, systems need to be extremely accurate at the micrometer scale. Current methods are either extremely expensive/delicate or the error intervals are too wide.

Researchers at Purdue University have developed a new method for high-precision 3D measuring using a structured light system. A standard pinhole projector calibration is used, which allows for optimization of the 3D coordinates of the feature points used for further calibration of the telecentric lens. This allows the system to achieve extreme accuracy at approximately 3mm with an estimated volume of 10mm x 8mm x 5mm.

Advantages:

-Simple model based on telecentric lens

-Accuracy of approximately 3mm

Potential Applications:

-3D printing

-Computer part manufacturing

TRL: 6

Intellectual Property:

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Category
Buildings, Infrastructure, & Construction/Construction Robotics & 3D Printing
Robotics & Automation/Perception & Sensing
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