



## ESTIMATING DEPTHS IN A SCENE USING SINGLE-PHOTON DETECTORS AND BINARY STRUCTURED LIGHT PATTERNS

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### The Invention

UW researchers created a system comprised of single-photon detectors, such as single-photon avalanche diodes (SPADs), along with high-speed projectors that use digital micromirror devices (DMDs) for displaying binary patterns. They also developed novel coding schemes to capture and render the 3D images. The structured light encoding strategies use error-correction codes that enable robust decoding for Single-Photon structured light, even under large photon noise. This can provide fast and reliable 3D scanning of highly challenging objects (e.g., black tires and tubes, shiny and glossy metallic machine parts) that are considered impossible with conventional techniques.

### Applications

Industrial inspection and automation user interfaces AR/VR devices

### Key Benefits

high-speed high-sensitivity high dynamic range capabilities micron-level resolution reliable

### Additional Information

#### For More Information About the Inventors

- [Mohit Gupta](#)

#### Tech Fields

- [Information Technology: Image processing](#)

For current licensing status, please contact Michael Carey at [mcarey@warf.org](mailto:mcarey@warf.org) or 608-960-9867