Rotationally Shift Invariant and Multi-Layered Microlens Array

Title: Rotationally Shift Invariant and Multi-Layered Microlens Array

Invention: This invention describes a nontraditional use of the Gabor Superlens and is a configuration of multiple microlens array structures. The rotationally shift invariant and multiple microlens array system provides full-field of view imaging wherein all of the incoming light (i.e., light from all directions), in a solid angle of 4π steradians, is focused inside the optics.

Background: LiDAR and other sensing technologies have need for the collection of light reflected from a scene in full 4π steradians with one optical system, but achieving such systems has remained challenging. It has traditionally been considered impossible because it was believed that detectors must be placed outside the optics, blocking the incoming light. Therefore, there is a need for an optical design wherein the detectors are positioned to provide full-field of view imaging and/or photo collection without blocking any of the incoming light.

Applications:

- Autonomous vehicles
- Industrial sensing

Advantages:

- True full field of view (4π steradians)
- Contains no moving parts

Licensing Manager:

Amy Phillips
AmyP@tla.arizona.edu
(520) 621-9579
Refer to case number UA18-192

**Inventors**

**Joshua Rodriguez**
Graduate Student, Optical Sciences

**Brandon Hellman**
PhD student, Optical Sciences

**Yuzuru Takashima**
Associate Professor, Optical Sciences