Multi-Aperture Visual Sensor with Hyperacuity

Description of Technology

The Multi-Aperture Visual Sensor with Hyperacuity is a passive light sensor based on the visual system of the common house fly (Musca domestica). The sensor consists of seven focusing lenses, seven optical fibers, and an aluminum housing to hold all the pieces together in the precise alignment required.

Applications

This technology has applications in various military and industrial imaging and computer vision tasks, such as mobile robot vision sensors, wheelchair guidance, high speed inspection of railroad track, and long term monitoring of stationary structures (i.e. buildings, bridges). This technology could also be implemented in military robotics such as unmanned aerial vehicle obstacle avoidance and automated landing.

Features & Benefits

This technology employs the phenomenon of hyperacuity (the ability to resolve motion much smaller than its photoreceptor spacing suggests) and excels at detecting motion and edges. This technology exceeds the capability of traditional imaging sensors such as CCD or CMOS arrays for detecting motion. This technology improves on previous sensors developed at the University of Wyoming with easier fabrication, smaller size, and increased performance.