## Compact field of view (FOV) expansion module

The setup combines Optotune's EL-16-40 liquid lens and MR-15-30 fast steering mirror to expand the field of view and depth of field of an imaging system. Even when using a modest 3 MP camera, this unique combination of Optotune's products results in an imaging resolution that surpasses the human eye, offers a FOV of 100° x 70°, and allows stitching of a 1500 MP image.

**optotune**

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# FOV expansion module

The standalone camera on the left is equipped with a wide-angle objective to capture the overall scene. The camera on the right, equipped with a narrow-angle tele lens, looks onto the mirror and allows to "zoom-in" and select a small AOI out of a 100° optical FOV. By stitching together individual images, a gigapixel image can be obtained.

At the same time, the liquid lens enables focusing within milliseconds from 30 cm to infinity.

Applications lie in security systems such as surveillance and face-tracking in airports and other public spaces.

Any application where high resolution and a large FOV is key will benefit.





## Applications

>Video surveillance, face & iris recognition, traffic sign detection, driver monitoring...

## Principle





- Camera
- Narrow angle lens
- Wide angle lens
- EL-16-40 lens
- MR-E-2 head unit
- MR-E-2 base unit
- Lens controller
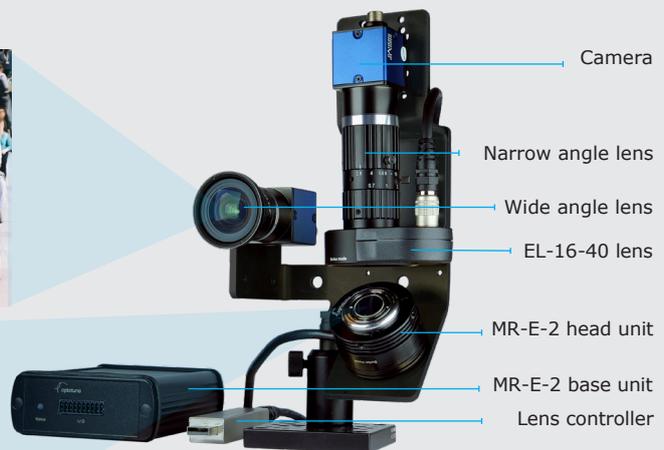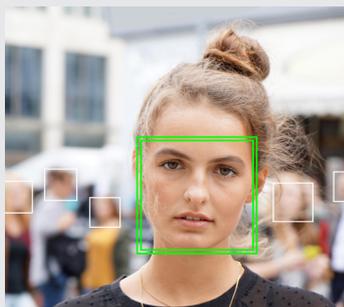
## Components

| | |
|---|---|
| Camera | Daheng 1/1.8" 3MP * |
| Wide angle lens | 4mm (80° HFOV) |
| Narrow angle lens | 50mm (8° HFOV) or 75mm (5° HFOV) |
| Optotune tunable lens | EL-16-40-TC-VIS-5D ** |
| Optotune 2D mirror | MR-E-2 head unit (DVIS) and base unit |
| Lens controller | EL-E-4i |

## Performance

| | |
|---|---|
| Mirror diameter | 15 mm |
| Mechanical tilt angle | ±25° X axis; ±25° Y axis |
| Step response time (small / large step) | 5 ms / 20 ms |
| Focal tuning range | -2 dpt to +3 dpt |
| Angular resolution | 4 mdeg/pixel (50mm lens) or 2.5 mdeg/pixel (75mm lens) |

* Any GeniCam compatible cameras supported
** Filter thread needs to be M27 and M30.5 for 50mm and 75mm lenses, respectively