

Hand Motion Sensor (ToF Sensor)

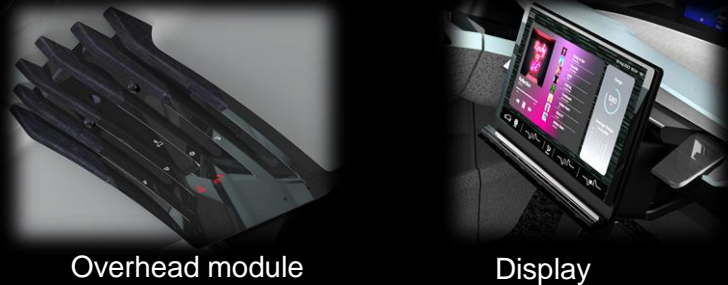
手の動きを捉えるセンサ (ToFセンサ)

Purpose

The use of a low-cost optical ToF sensor that can detect distance to detect natural hand motions in a car.

Outline

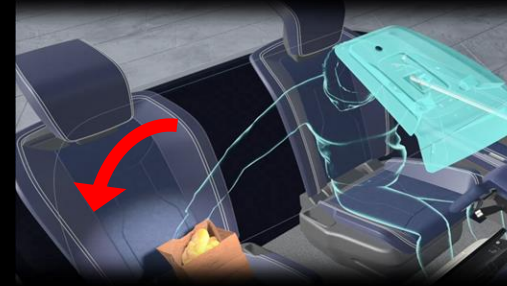
An optical ToF sensor installed in an overhead module or around a display detects swipe and other hand gestures and a hand approaching the passenger seat or other objects in the car.



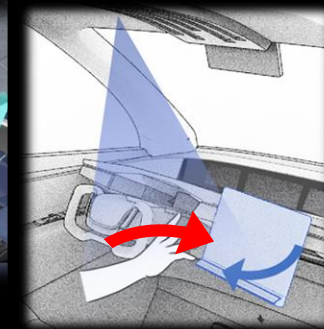
Overhead module

Display

Assumed installation sites

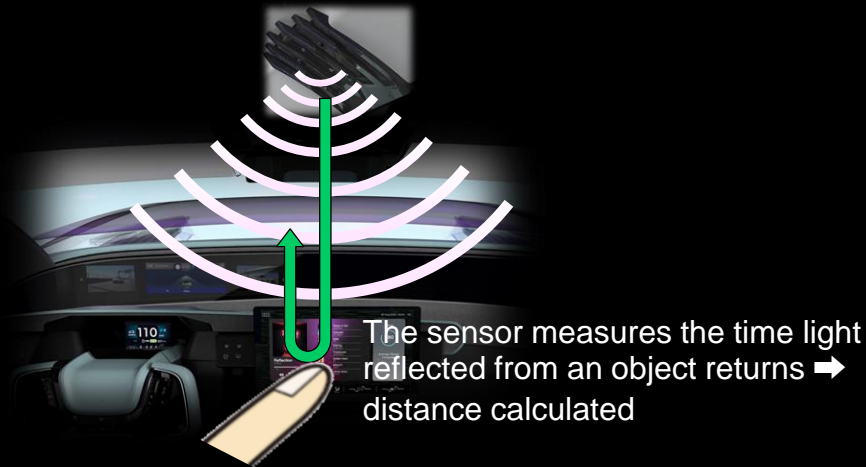


Access to passenger seat

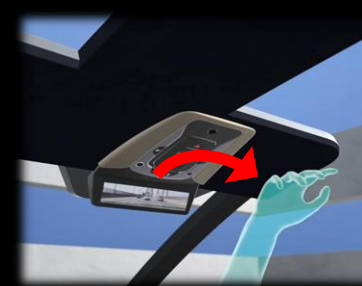


Access to display

① Detection of a hand approaching an object



ToF ranging system



② Swipe

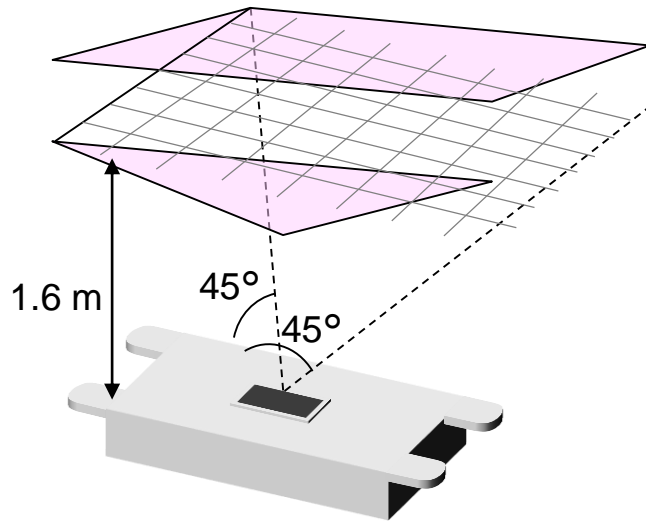


③ Detection of approaching object

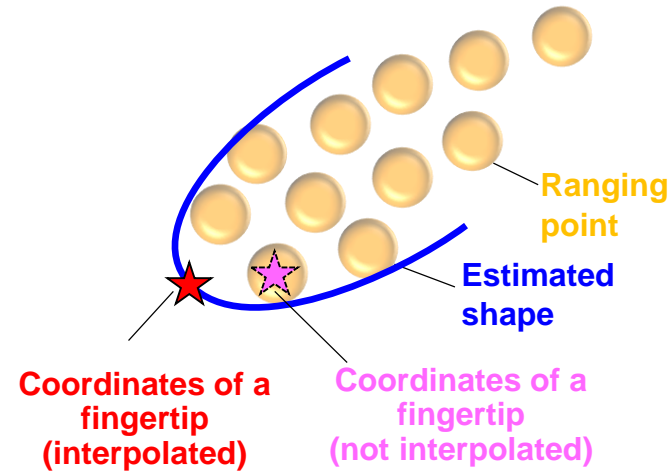
Examples of detectable motions and services

Technology

Distance information obtained by the low-resolution optical ToF (Time of Flight) sensor are combined with an algorithm that interpolates the coordinates of a fingertip to save cost and detect gestures stably.



Low-cost ToF sensor

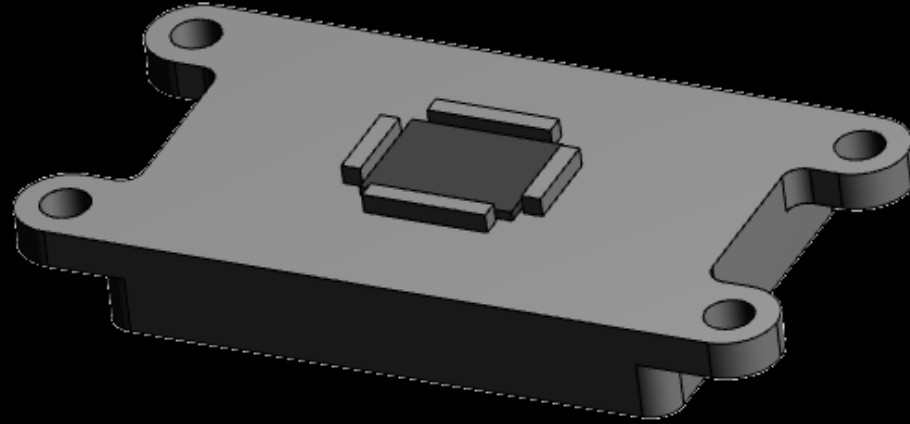


Accuracy improved by interpolating (close range only)



Cost saving and stable detection

Specifications



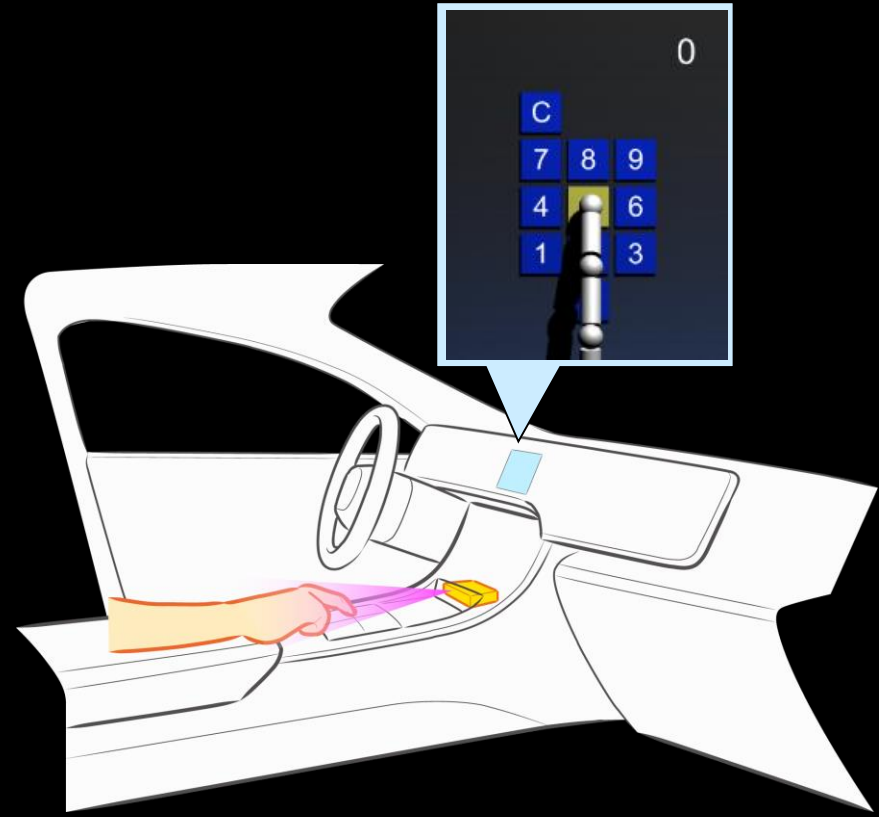
Optical ToF sensor module (developed item)

Dimensions (H × W × D)	40 × 60 × 10 mm (except for attaching section)
Detection distance	1.6 m
Detection angle	60 degrees (opposing corner)
Detection frequency	15 Hz
Operating temperature range	-30 to 85 °C

Future use



Detection of human presence or the direction of movement



Three-dimensional pointing