

# Smartphone-Based Handheld Ophthalmic Examination Device

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## Technology description

### Invention

Researchers at the University of Arizona have developed a comprehensive ophthalmic system with a handheld smartphone-based examination device for ocular diagnosis that uniquely monitors of both eyes to detect disease, drug use or fatigue. This multi-operative device/system possesses many capabilities for preliminary ocular examinations namely; (bio-) microscope or ophthalmoscope function, ophthalmic slit-lamp, a pupillometer, fundoscope, scheimpflug camera, and stereo imaging (stereo-photo) device. This invention is a portable, hand-held, device/system that is compatible with medicine-related telecommunication.

### Background

The ability to provide standard examination procedures in a setting outside a clinic has become an increasing technological trend. Not everyone has access to clinical care and, as a result, it is pertinent to explore more mobile approaches to health care. Demand for mobile medical devices is therefore increasing and is highly applicable in at-home care, space, military forward operating bases, ships afloat, disaster areas, on-field sporting events, and/or humanitarian missions.

## Application area

Fundoscopy/fundus cameras

Pupillometry

Macro and micro imaging of ocular surfaces and interior structures

Slit-lamps

Scheimpflug imaging

Use outside a clinical setting

## Advantages

Portable and hand-held

Telecommunication aids in early diagnosis of ocular conditions

Applicable to a variety of clinical fields

## Institution

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