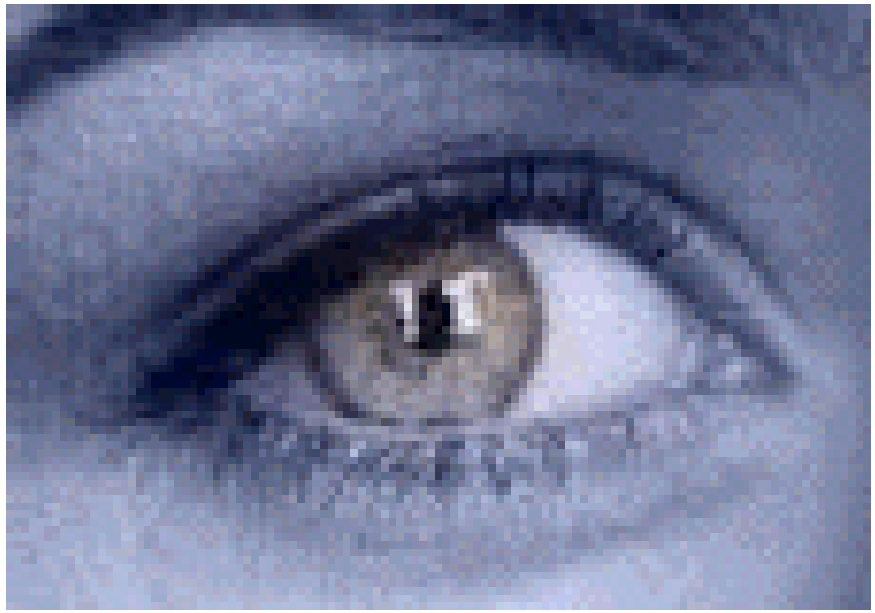
Smart Sensors Ltd

Products for Iris Recognition



Wanausha Khafaf – BDE

Smart Sensors Limited (UK)

About Smart Sensors Limited

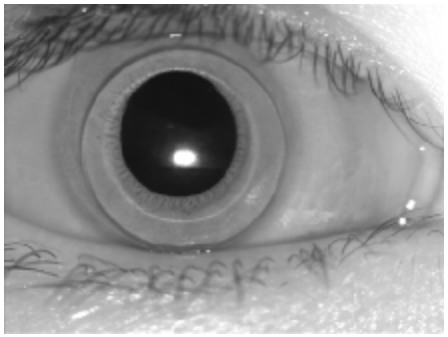
- Owns and develops Intellectual Property for image recognition, identification and analytics applications
- Partners by supplying software development tools, image capture system design, cameras and know-how for iris biometrics applications
- We work with camera manufacturers and systems integrators, helping them build competitive and effective solutions with iris biometrics
- “Small footprint” methods give rapid performance and ability to scale to many different processor platforms (PC, PDA, Linux, DSP)
- **MIRLIN** = **M**onro **I**ris **R**ecognition **L**ibrary and **IN**terface, based on work of Prof. Don Monro (University of Bath, UK)
- Very competitive performance: high accuracy, high speed
- Changing the iris biometrics business model to one that makes economic sense for developers and end-users
- Implementations and licence terms that open up volume markets

Key benefits of Iris Recognition

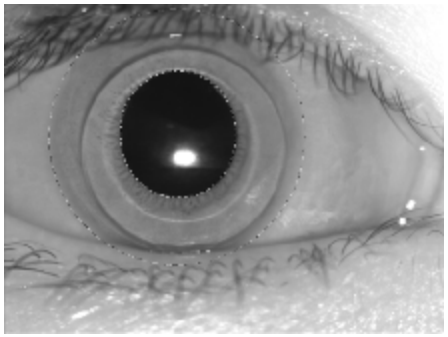
- Fundamentally simple
  - Ø A digital photo of the eye, using night-vision illumination (Near Infra-Red = NIR)
- Exceptional discrimination power
  - Ø Excellent for IDENTIFICATION applications
  - Ø De-duplication in large scale enrolment programs
- Non-contact, hands-free usage
  - Ø Non-intrusive, Convenient, Versatile
- Good where fingerprints are not good
  - Ø Low and high humidity, manual workers, elderly, ...

MIRLIN – SDK for Iris Recognition Systems

- Fully featured software kit with licences for research or product and systems development
- Available for popular C and C++ tools on Windows PC/XP, Win CE, LINUX and TI OMAP
- Fast performance – processes >15 frames/second on PC
- Accepts images to ISO/IEC 19794-6 acquired in Near Infra Red, recommended at least 100 pixels across the iris
- Quality metrics enable rapid image assessment before computing resource is spent on image segmentation
- Supports Enrolment, Verification (1:1) and Identification (1:N) functions
- Diagnostic output: iris/pupil sizes and co-ordinates, image quality, occlusion and overlap metrics
- Fast template matching based on Hamming Distance
  - Ø Uses simple XOR logic
  - Ø Typically 500,000 matches/second with PC server configurations. Much more with hardware accelerator



Original iris image: note hard contact lens present



Segmented iris image

Normalised iris image

Binary template for matching

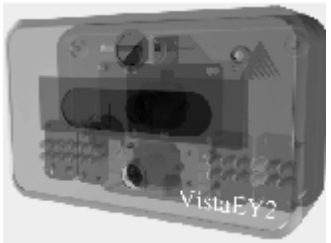
Low cost cameras

- USB 2.0 interface
- Provides video image stream
- Automatic iris capture mode
- Standard camera tripod mount
- “Cold” mirror enables easy self-acquisition of images
- Multi-wavelength NIR LEDs
- CMOS sensor and custom optics for excellent image quality
- Ultrasonic auto-range sensor
- MT2: Multi-modal handheld unit
- FA2: Single-eye Iris/Face camera
- EY2: Dual-eye Iris/Face camera
- Full audio interface (mic+spkr)

MT2: Multi-modal biometric acquisition unit for handheld or mounted use by operator, or by user. Iris camera, face camera and optical fingerprint sensors.

EY1: Single-eye Iris Camera in compact OEM module form, for embedding into user’s own products, e.g. kiosk. 75mm wide.

EY2: Dual-eye Iris camera with separate facial capture camera, USB interface. Provides images compliant with ISO19794-5 (face) and ISO19794-6 (iris).



FA2: Compact iris/face acquisition module for door-mounted, tripod, or hand-held operation (actual size 93 x 93 x 50mm). Includes full USB audio codec. Optional swivel positioning mount.

All camera products supplied by Smart Sensors include our own camera control SDK for full compatibility with MIRLIN iris recognition tools

Precision Dual-Eye cameras

- Dual-eye Auto-focus iris capture
- High speed USB 2.0 interface
- Precision optics, high quality sensors = pristine images
- Advanced features include liveness detection and spoof counter-measures
- Images through eye-wear
- Visual feedback display
- Audio I/O via USB – play instructions in user's own language
- Smart Sensors control SDK = easy integration with MIRLIN iris recognition tools

AD-100: Precision Dual-Eye Auto-focus iris camera with advanced features built-in for liveness detection, spoof countermeasures, and automatic compensation for imaging through most eye-wear. Provides facial images compliant with ISO 19794-5 too.

The IG-AD100 dual-eye iris imager system

Smart Sensors' Software Summary

- Iris/Pupil finder
  - Ø very rapid location of iris and pupil – coordinate output
  - Ø ideal for camera developers
- MIRLIN SDK - fully featured software toolkit
  - Ø for iris recognition engines and back-end ID server systems
  - Ø excellent cross-platform support (Linux, PC/XP, Win CE)
- Bath Iris Image Database
  - Ø 800 people / 1600 eyes / 32,000 images
  - Ø ideal resource for test and evaluation
- MIRLIN Iris Analyst™
  - Ø integrated suite of tools that generates ROC/DET curves and bins images according to quality metrics vs. performance

Contact Details

- Further information available from:

Ø Smart Sensors Limited
Carpenter House Innovation Centre
BATH, BA1 1UD
United Kingdom

Tel: +44 (0) 1225 388690

Wanausha Khafaf – Business Development Executive
wkhafaf@smartsensors.co.uk

Follow us on Twitter: http://twitter.com/SmartSensorsLtd