

NXP EdgeReady i.MX RT117F MCU-BASED SOLUTION FOR 3D FACE RECOGNITION

The NXP EdgeReady i.MX RT117F MCU-based solution for 3D face recognition enables developers to quickly and easily add 3D face recognition with advanced liveness detection to their products, with the confidence that it will work in even the most challenging outdoor lighting conditions and can resist the most sophisticated spoofing attacks. 3D liveness detection defeats spoofing attempts using photographs or 3D models, and uses a high performance 3D structured light camera module (SLM) with an optional low cost CMOS sensor based RGB camera, without requiring the use of an expensive, power hungry, Linux based MPU with long boot times. The development kit for this solution, SLN-VIZN3D-IOT, comes with fully integrated turnkey software, for quick out-of-the-box operation, minimizing time to market, risk and development effort. Face recognition and liveness detection is done entirely offline, on the i.MX RT117F MCU, without using the cloud, addressing the privacy concerns of some consumers and eliminating the latency associated with cloud-based implementations. The solution includes an available remote registration capability to allow end users to register their faces from mobile devices.

TARGET APPLICATIONS

Smart home, smart building and smart industrial applications that need secure user identification and authentication in even the most challenging lighting conditions

- Smart Door Locks (homes and hotels)
 - Optimized for low power consumption to maximize battery life
 - BLE connectivity for OTA software updates and face template updates of remotely registered users
 - Supports up to 100 registered users
- Access control (smart building, smart industrial)
 - Wi-Fi connectivity for OTA software updates & face template updates of remotely registered users
 - Supports up to 3000 registered users



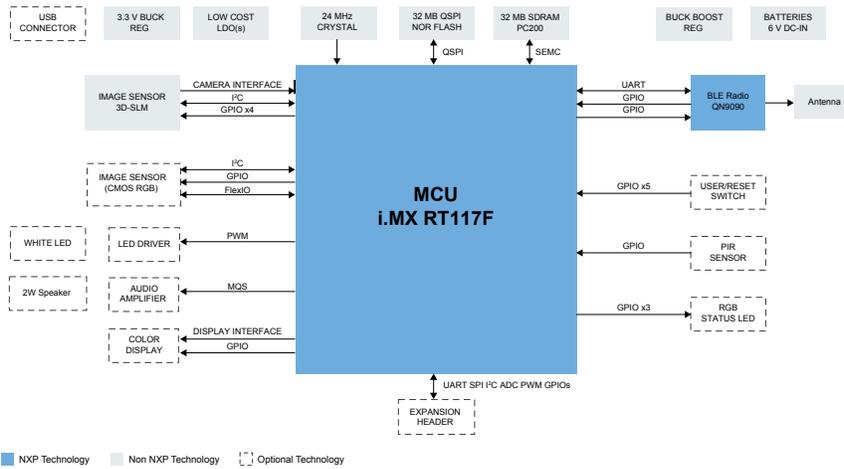
i.MX RT117F 3D FACE RECOGNITION CROSSOVER PROCESSOR OVERVIEW

The i.MX RT117F is an EdgeReady member of the i.MX RT1170 family of crossover MCUs, targeting low cost embedded secure face recognition applications. It features NXP's advanced implementation of the Arm® Cortex®-M7 core, which operates at speeds up to 1 GHz to provide high performance and real-time response. In addition to the 3D face recognition capability, the i.MX RT117F has plenty of available CPU and memory resources, and includes many integrated peripherals, making it suitable to be the main controller in many different product categories, running the access control device's application code concurrently with face recognition.

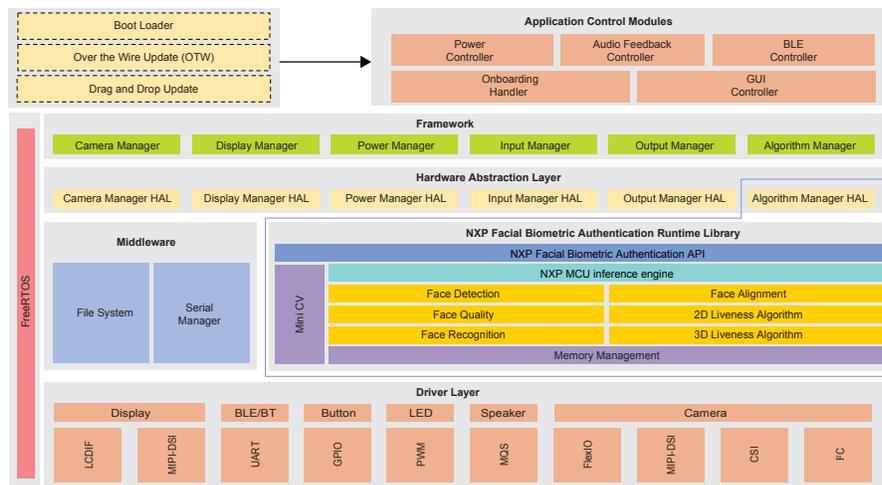
The i.MX RT117F MCU is licensed to run NXP's facial biometric authentication library which includes (see software block diagram section for more information):

- Camera drivers, image capture and pre-processing
- Face detection, tracking, alignment and recognition (with quantified results and confidence measure)
- Liveness detection for 2D and 3D anti-spoofing
- Built-in security, bootloader and application validation
- All drivers, inc. Bluetooth™ Low Energy and Wi-Fi (coming soon)
- OTW Client with signing scripts, rollback & image redundancy
- USB mass storage device updates
- Factory Automation Scripts
- Supported by MCUXpresso SDK, IDE and Config Tools

HARDWARE BLOCK DIAGRAM



SOFTWARE BLOCK DIAGRAM



PART NUMBER	DESCRIPTION	FEATURES	DIMENSIONS
SLN-VIZN3D-IOT	MCU-based 3D face recognition solution evaluation and development kit	<ul style="list-style-type: none"> NXP EdgeReady turnkey software solution for 3D face recognition with liveness detection i.MX RT117F 3D face recognition crossover processor 3D Structured Light Module (SLM) Camera RGB Camera 2.4" TFT display (240x320) Audio amplifier and speaker 32 MB QSPI NOR Flash 32 MB SDRAM Bluetooth® Low Energy (BLE) 5.0 Dual band Wi-Fi + BLE 5.1 MikroE™ Click expansion header 	173 x 92 x 20 mm (maximum)
MIMXRT117FDVMAA	i.MX RT117F 3D face recognition crossover MCU	<ul style="list-style-type: none"> 1 GHz Arm Cortex-M7 MCU with runtime license for 3D face recognition software 2 MB on-chip RAM 	14 x 14 x 1.37 mm (LFBGA289)
QN9090HN/001K (OM15069-2 module)	Bluetooth® Low Energy (BLE) 5.0 Wireless MCU	<ul style="list-style-type: none"> 48 MHz Cortex-M4 640 kB Flash, 152 kB RAM, 128 kB ROM 	Device: 6 x 6 x 0.85 mm (TQFP-40) Module: 13 x 30 x 2 mm
IW416UK/A1CZ (AW-AM510 module)	IW416: 2.4/5 GHz Dual-Band 1x1 Wi-Fi® 4 (802.11n) + BLE 5.1	<ul style="list-style-type: none"> 802.11 a/b/g/n dual band Up to MCS7 data rates (150 Mbit/s) DRCS for simultaneous 2.4 GHz & 5 GHz operation 802.15.4, LTE, etc. coexistence WPA3, WPA2, WPA2 & WPA mixed mode, WEP 	Device: 3.95 x 3.565 x 0.495 mm (WLCSFP76) Module: 12 x 12 x 1.85 mm

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