Simplifying
design and development
of computer vision
applications

Vision Toolbox for MATLAB™ for Computer Vision and Sensor Fusion

The Vision Toolbox is a development solution for S32V Arm®-based processors
to easily edit, simulate, compile, and deploy computer vision and sensor fusion designs
in a Mathworks® integrated development environment.

TARGET APPLICATIONS

‣ Front View Camera

‣ Smart Rear View Camera

‣ Surround View & Sense Park Assist System

‣ Lane Departure Warning

‣ Sensor Fusion

‣ Machine Vision

‣ Facial Recognition

‣ Traffic Count

‣ Pedestrian Detection

As part of the NXP Model-Based Design software enablement,
the Vision Toolbox is a wrapper on top of the NXP Vision
Software Development Kit (vSDK) reducing software
toolchains, together with prototype and design time for safe
and robust computation-intensive vision applications.

VISION TOOLBOX FEATURES

‣ Seamless integration with MATLAB environment for easy
vision application development, simulations, and target
running support

‣ Generate code for Linux™ based applications with direct
download to target support

‣ Built-in support for IO functions to control onboard camera
and display

‣ Integrated NXP Software:
    Vision SDK – includes ISP and APEX kernels
    Linux board support package for A53 core development
    NXP APU Compiler
    Arm Compiler

‣ Support A53 and APEX programming directly from
MATLAB m-scripting

‣ Example projects demonstrating ISP and APEX
functionalities based on Mathworks Computer Vision
System Toolbox examples

SOFTWARE DEVELOPMENT FLOW

The Vision Toolbox supports our S32V Vision processors aimed for fast, massively parallel image operations (APEX) and Image Signal Processing (ISP) of the camera inputs by extending the capabilities of the MATLAB image tools together with our hardware and software solutions.

Engineers can use Vision Toolbox to get an autogenerated code and direct implementation of their S32V234 MPUs based applications. The S32V234 is our second generation vision processor family offering an ISP, powerful 3D GPU, dual APEX-2 vision accelerators, and safety and security.

SOFTWARE DEVELOPMENT FLOW
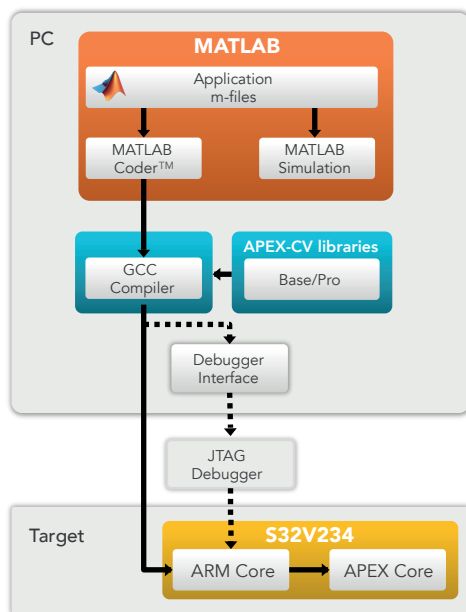
SOFTWARE REQUIREMENTS

MathWorks products required:

▸ MATLAB

▸ MATLAB Coder™

▸ Embedded Coder™

▸ Image Processing Toolbox

▸ Computer Vision System Toolbox

▸ Arm Cortex®-A Embedded Coder Support Package

GET STARTED

www.nxp.com/VisionToolbox

▸ Vision Toolbox Quick Start Guide

▸ Vision Toolbox User Guide

▸ Installing Vision Toolbox in MATLAB guide

▸ Set up the Vision Toolbox Software Enablement guide

VISION TOOLBOX RESOURCES

Ready-to-run examples and applications:
- How to detect Lines
- How to detect Pedestrians
- How to detect Faces

Dedicated Engineering online Community
https://community.nxp.com/community/mbdt