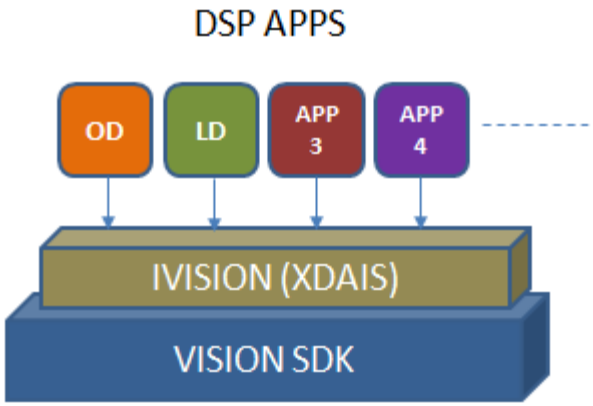
- **IVISION (XDAIS) interface compliant**
- **Validated on TDA2x EVM**
- **Supports Traffic light recognition**
- **Supports Hough transform for circles**
- **Kalman filter based tracking supported**
- **Supports user controlled thresholds to control the accuracy (False positive vs True Negative)**



Description

Circular Light Recognition module is TI's proprietary Vision and Imaging algorithm implemented on TMS320C66x DSP. Circular Light Recognition module is validated with Code Composer Studio version 5.1.0.09000 and code generation tools version 7.4.2.

Performance and Memory Summery

Table 1. Configuration Table

CONFIGURATION	ID
Traffic light recognition	CLR_001

Table 2. Performance statistics

CONFIGURATION ID	TEST DESCRIPTION	TI C66X DSP PERFORMANCE STATISTICS / FRAME	
		MIN (MEGA CYCLES)	MAX (MEGA CYCLES)
CLR_001	roiWidth = 1200 roiHeight = 307 numRadius = 7 trackingMethod = 1 morphologyMethod = 1 radius = 3 4 5 7 9 12 16 scalingFactor = 0 0 1 1 1 2 2	1.77	2.17

[1] Performance is validated by running on TDA2x platform. DDR-532Mhz, DSP-600Mhz. The performance of the algorithm will vary depending on the number of traffic lights available in the scene

Table 3. Memory Statistics

CONFIGURATION ID	RESOLUTION	MEMORY STATISTICS[1]						
		PROGRAM MEMORY	DATA MEMORY					TOTAL
			INTERNAL	EXTERNAL			STACK	
				PERSISTENT	SCRATCH	CONST		
CLR _001	1200x307	27.96	134.29	289.51	2748	0	6	3205.76

[1] All memory requirements are expressed in kilobytes (1 K-byte = 1024 bytes) and there could be a variation of around 1-2% in the numbers.

Table 4. Internal Data Memory Split-up

CONFIGURATION ID	DATA MEMORY – INTERNAL[2]		
	SHARED		INSTANCE[3]
	CONSTANTS	SCRATCH	
CLR _001	0	134.29	-

[2] Internal memory refers to on chip memory. All memory requirements are expressed in kilobytes and there could be a variation of around 1-2% in numbers. L1D memory is split into 16kb of SRAM, 16kb of cache. L2 memory is split as 224kb of SRAM and 64 kb of cache. Executing circular light recognition module with other DSP algorithm which requires different L1D configuration could hinder performance.
[3] I/O buffers are not included. Some of the instance memory buffers could be scratch.

references

- CircularLightRecognition_DSP_UserGuide.pdf

glossary

Constants	Elements that go into .const memory section
Scratch	Memory space that can be reused across different instances of the algorithm
Shared	Sum of Constants and Scratch
Instance	Persistent-memory that contains persistent information - allocated for each instance of the algorithm

acronyms

DMA	Direct Memory Access
EVM	Evaluation Module

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