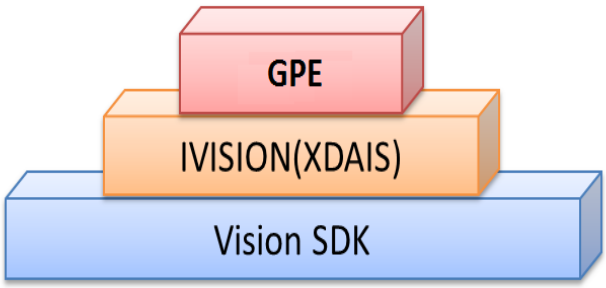
- **IVISION (XDAIS) interface compliant.**
- **Validated on TDA3x EVM.**
- **Supports estimation of 3D ground plane equation using set of 3D points.**
- **Supports single precision 32 bit floating point format for in 3D points.**
- **Scaled or non-scaled 3D points can be provided to algorithm.**
- **Supports user controlled parameters to control between accuracy and run time performance.**



Description

Ground Plane Estimation (GPE) module is TI's proprietary Vision and Imaging algorithm implemented on TMS320C66x DSP. GPE module is validated with Code Composer Studio version 5.4.0.00091 and code generation tools version 7.4.19.

Performance and Memory Summery

Table 1. Configuration Table

CONFIGURATION		ID
Maximum Number of 3D points Maximum RANSAC Iteration Number of times inlier check Number of Input 3D points In Ransac	= 9000 = 3000 = 22 = 268	GPE_001

Table 2. Cycle Performance Statistics

CONFIGURATION ID	TEST DESCRIPTION	TI C66X DSP PERFORMANCE STATISTICS	
		MIN (MEGA CYCLSE PER CALL)	MAX(MEGA CYCLES PER CALL)
GPE_001	Pre Recorded Road Scene	2.1	2.2

[1] Performance is validated by running on TDA2x platform. DDR-532Mhz, DSP-600Mhz. Performance number is heavily dependent on input data.

Table 3. Memory Statistics

CONFIGURATION ID	MAX NUM 3D POINTS	MEMORY STATISTICS[1]						
		PROGRAM MEMORY	DATA MEMORY					TOTAL
			INTERNAL	EXTERNAL			STACK	
				PERSISTENT	SCRATCH	CONST		
GPE_001	9000	21	193(L2)	1	0	0.1	6	221.1

[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	
GPE_001	0	193(L2)	-

[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. For L1D 16KB is configured as cache, whereas for L2D 128 KB is configured as cache.

notes

- I/O buffers:
  - Input buffer size for input object information is 1544 bytes.
  - Input buffer size for 3D points is 24*N, where N is the maximum number of 3D points.
  - Output buffer size = Not any output buffer.
  - Total data memory for N non pre-emptive instances = Constants + Runtime Tables + Scratch + N * (Instance + I/O buffers + Stack)
- Total data memory for N pre-emptive instances = Constants + Runtime Tables + N * (Instance + I/O buffers + Stack + Scratch)

references

- GroundPlaneEstimation_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

GPE	Ground Plane Estimation
CIF	Common Intermediate Format
DMA	Direct Memory Access
DMAN3	DMA Manager
EVM	Evaluation Module
MV	Motion Vector
QCIF	Quarter Common Intermediate Format
QVGA	Quarter Video Graphics Array
SQCIF	Sub Quarter Common Intermediate Format
UMV	Unrestricted Motion Vectors
VGA	Video Graphics Array

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PRODUCT PREVIEW