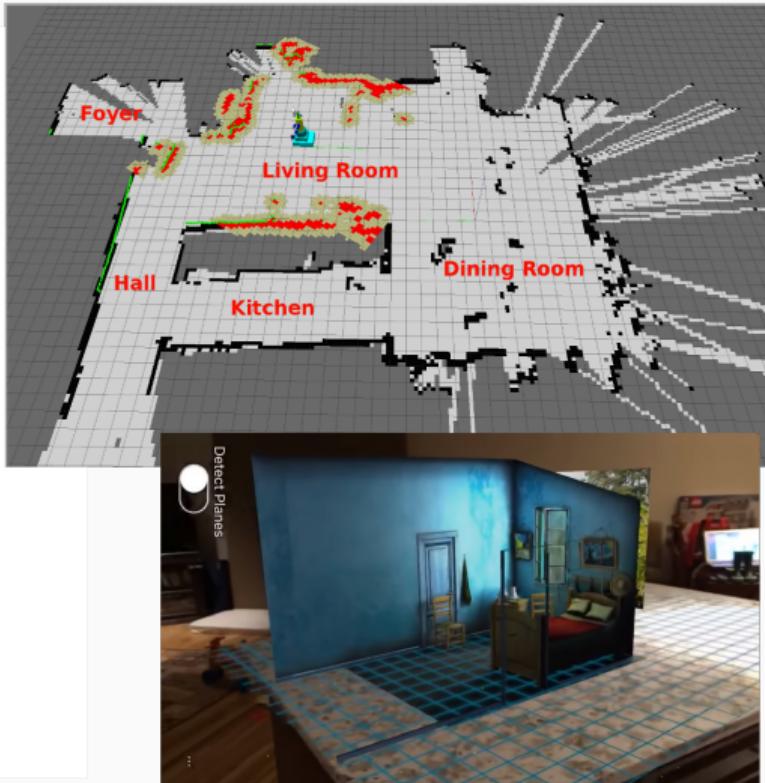
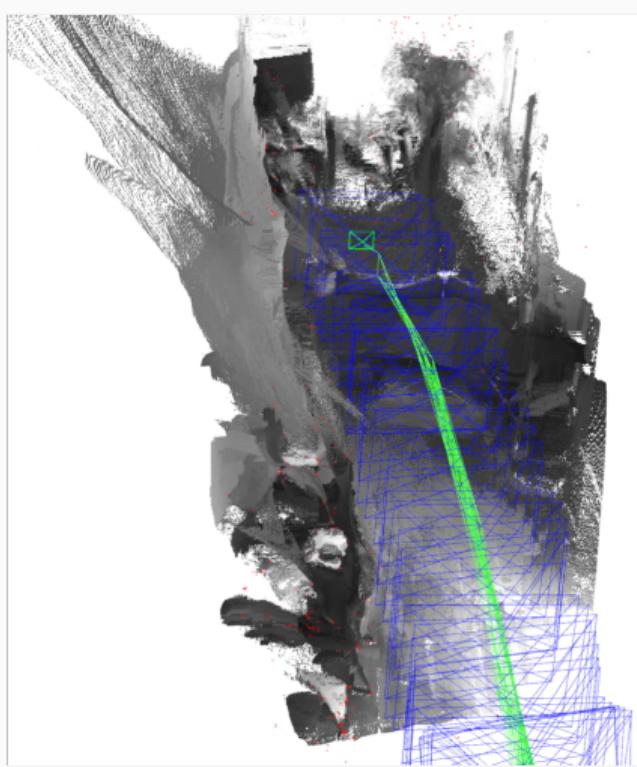


ORB SLAM Point Cloud generation on Apalis iMX8

Stefan Eichenberger, CPVR Lab

25.01.2019

Why SLAM



Toradex Apalis iMX8



A72
@1.6 GHz

A53
@1.2 GHz

M4
@266 MHz

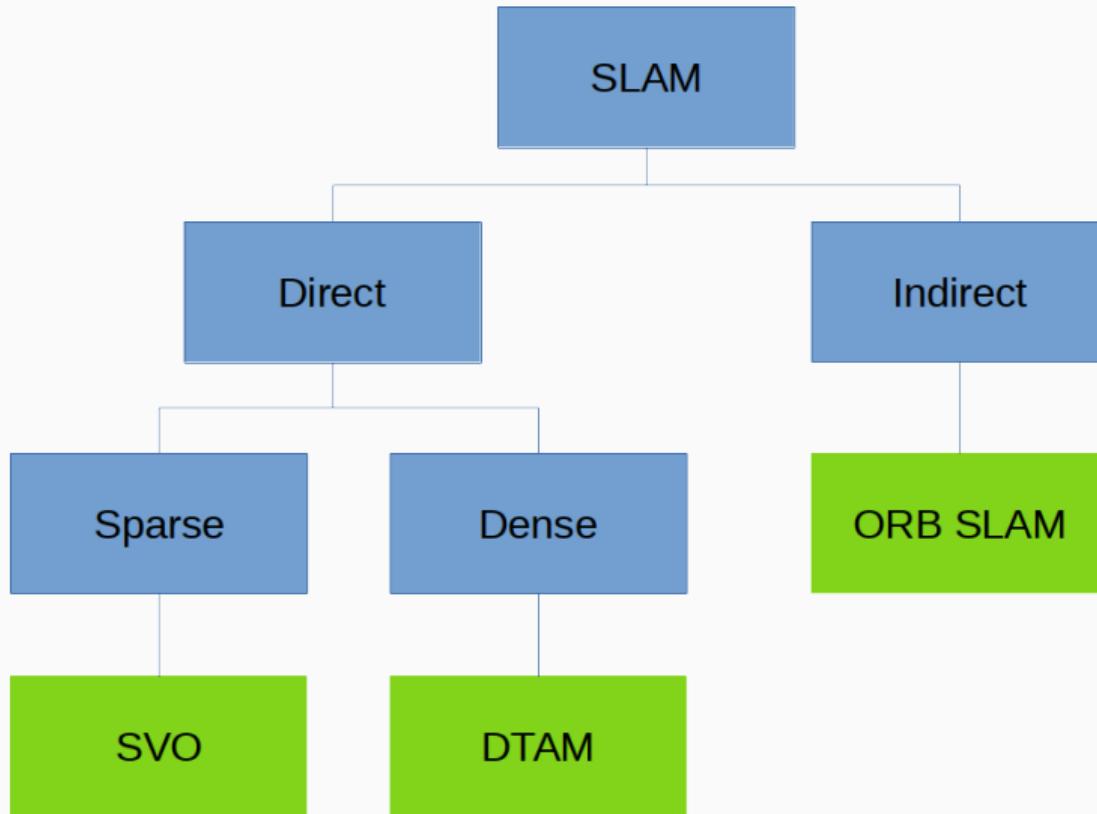


Vivante GPU
GC7000

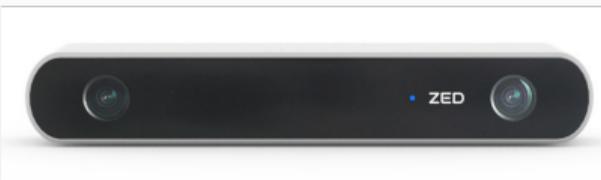
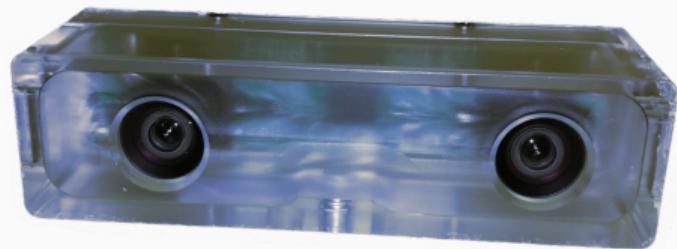
Why Apalis iMX8?



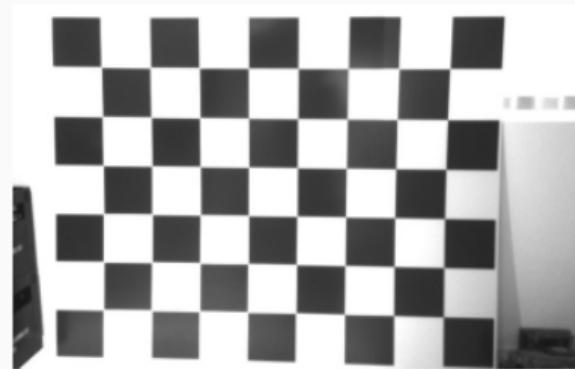
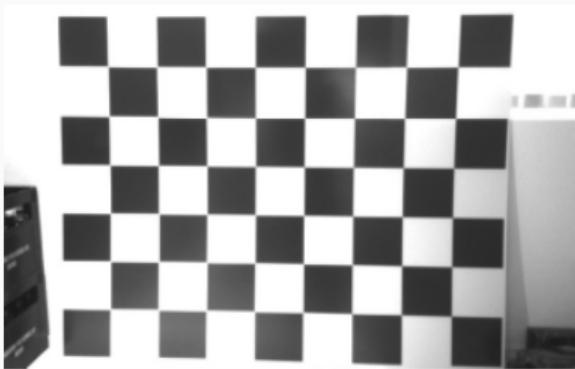
Different SLAMs



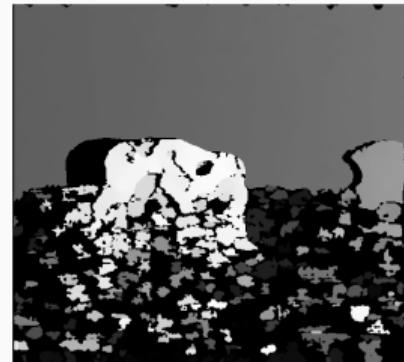
Stereo Camera



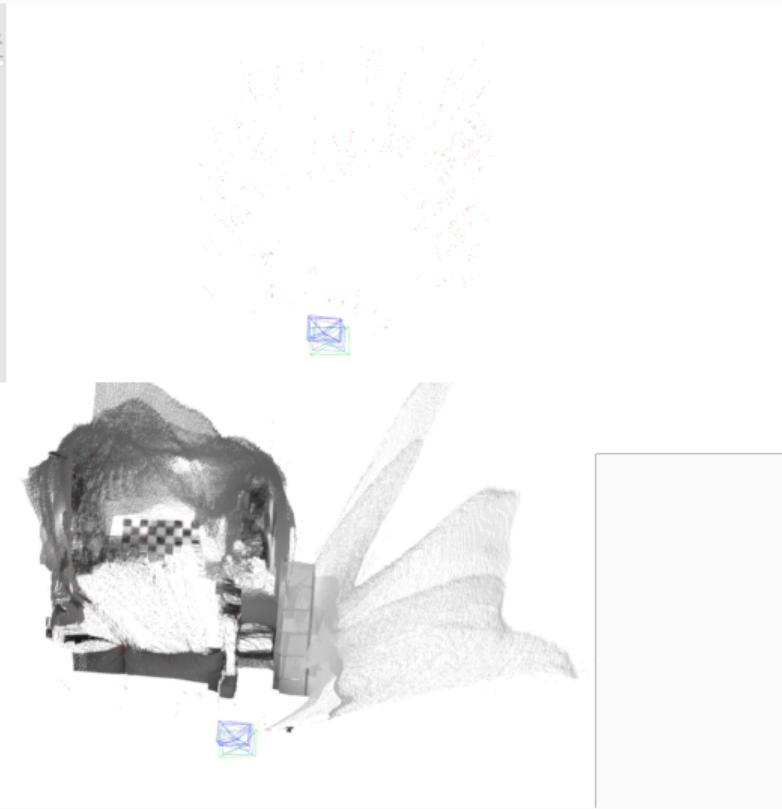
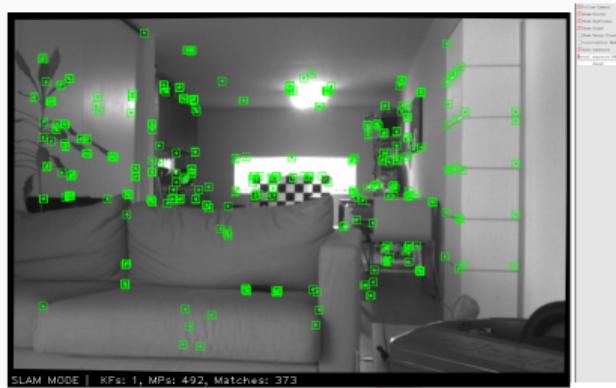
Stereo Calibration



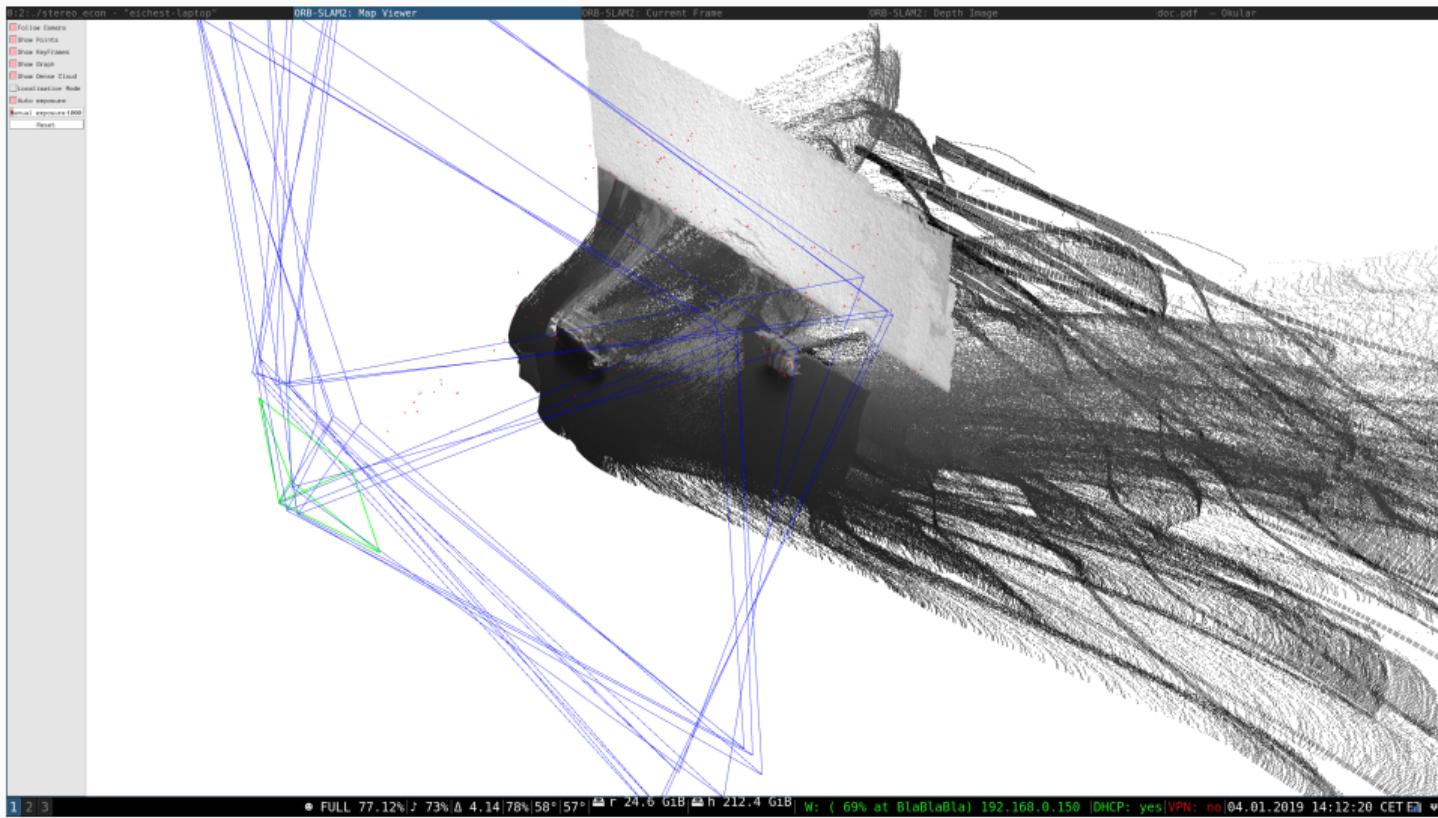
Depth from Stereo



ORB SLAM



Densification

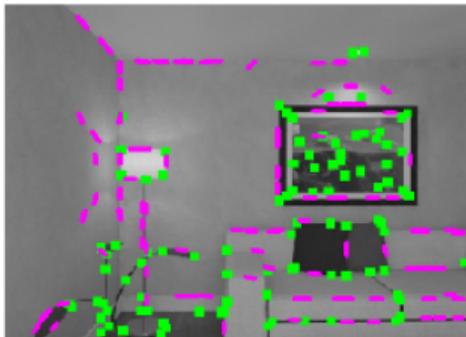


Results (KITTI 04 Dataset)

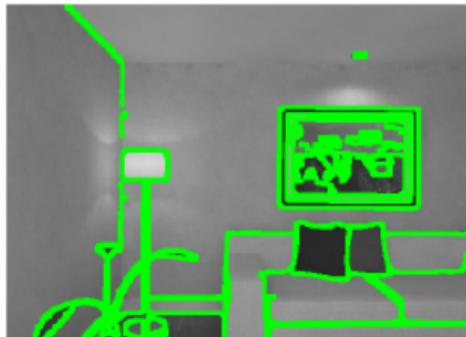
CPU	Impl.	feat.	feat. det.	med. tt	mean tt
iMX8	ORB	1000	548	0.18307	0.185202
iMX8	ORB, Lin. sched.	1000	548	0.390867	0.387753
iMX8	OpenCV	1000	757	0.190571	0.210072
iMX8	OpenCV	800	610	0.155441	0.167176
iMX8	OpenCV, Lin. sched.	800	610	0.358689	0.362126
iMX8	OpenCV OpenCL	800	610	0.50622	0.771859
i5-7Y54	ORB	1000	546	0.18884	0.184628
i5-7Y54	OpenCV	1000	756	0.154901	0.152786
i5-7Y54	OpenCV	800	610	0.135715	0.132304

Demo

Direct Approach



(a) Sparse



(b) Semi-Dense



(c) Dense

Questions

