

# Data Capture Module

## For Texas Instrument's mmWave Radar Sensors



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### Background

Advances in technology has made available radar sensors in compact packages, integrating both the analog frontend and digital signal processors into a single chip. To facilitate research in alternate methods of extracting useful information from the radar sensors, it is necessary to extract the raw data from the sensor, which can be challenging due to the high bandwidth requirements.

#### **Project Objectives**

This project involved the building of a data capture module for one of TI's mmWave radar sensors. A development board based on the Zynq UltraScale+ MPSoC is used to deserialize LVDS data from a IWR1843BOOST, then transfer the data to the processing system. A HTTP server then allows control of the radar and streaming data off-board to an external system for further processing.

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Reset Radar /dev/ttyACM1 v Connect Close Upload Config:   Browse radar_config.txt Reset FPGA	Stats	
mmWave Demo Logs	Total DMA Transfers: 65 Buffered Transfers: 65 Reset	
mmwDemo:/>CQRxSatMonitor 0 3 5 121 0 Done	System Logs	
mmwDemo:/>CQSigImgMonitor 0 127 4 Done	2022-03-17 06:51:23,633 - dataloader [INFO] total=6029312 2944.00 2022-03-17 06:51:23,633 - dataloader [INFO] waiting for DMA interrupt	
mmwDemo:/>analogMonitor 1 1 Done	2022-03-17 06:51:23,658 - dataloader [INFO] 23 Read 262144 bytes 2022-03-17 06:51:23,659 - dataloader [INFO] total=6291456 3072.00 2022-03-17 06:51:23,661 - dataloader [INFO] Waiting for DMA interrupt	
mmwDemo:/>cfarFovCfg -1 0 0 8.92	2022-03-17 00:51:23,683 - dataloader [INFO] 24 Read 262144 bytes 2022-03-17 06:51:23,683 - dataloader [INFO] total=6553600 3200.00 2022-03-17 06:51:23,686 - dataloader [INFO] Waiting for DMA interrupt 2022-03-17 06:51:23 708 - dataloader [INFO] 25 Read 262144 bytes	SINELY CNCL, SCSE
Done mmwDemo:/>cfarFovCfg -1 1 -1 1.00	2022-03-17 06:51:23,708 - dataloader [INFO] total=6815744 3328.00 2022-03-17 06:51:23,711 - dataloader [INFO] Waiting for DMA interrupt 2022-03-17 06:51:23,733 - dataloader [INFO] 26 Read 262144 bytes	
Done mmwDemo:/>calibData 0 0 0 Done	2022-03-17 06:51:23,733 - dataloader [INFO] total=7077888 3456.00 2022-03-17 06:51:23,736 - dataloader [INFO] Waiting for DMA interrupt 2022-03-17 06:51:23,758 - dataloader [INFO] 27 Read 262144 bytes 2022-03-17 06:51:23,758 - dataloader [INFO] total=7340032 3584 00	
mmwDemo:/> mmwDemo:/>sensorStart	2022-03-17 06:51:23,761 - dataloader [INFO] Waiting for DMA interrupt 2022-03-17 06:51:23,783 - dataloader [INFO] 28 Read 262144 bytes 2022-03-17 06:51:23,783 - dataloader [INFO] total=7602176 3712.00	
Uone mmwDemo:/>%setHsiClk 5 Skipped	2022-03-17 06:51:23,786 - dataloader [INFO] Waiting for DMA interrupt 2022-03-17 06:51:23,808 - dataloader [INFO] 29 Read 262144 bytes 2022-03-17 06:51:23,808 - dataloader [INFO] total=7864320 3840.00 2022-03-17 06:51:23 H1 - dataloader [INFO] total=7864320 asta	
mmwDemo:/>	2022-03-17 06:51:23,833 - dataloader [INFO] 30 Read 262144 bytes 2022-03-17 06:51:23,833 - dataloader [INFO] 30 Read 262144 bytes 2022-03-17 06:51:23,833 - dataloader [INFO] Waiting for DMA interrupt	
Send	2022-03-17 06:51:23,858 - dataloader [INFO] 31 Read 262144 bytes 2022-03-17 06:51:23 850 - dataloader [INFO] total-8388608 4006 00	

#### Web Interface for Module Control & Feedback

mmWave Radar mounted to FPGA development board

www.ntu.edu.sg/scse