JOY OF PYNQ

Unleash the joy of expressions!

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How it all started?

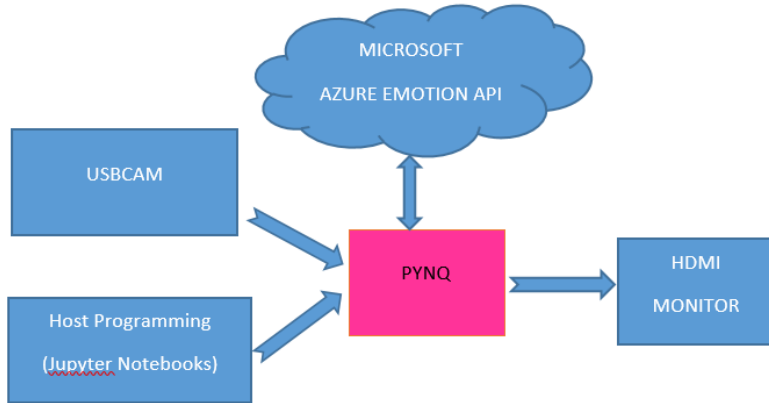Right on Sept 13th, Apple bet on AR and Animated Emoji with custom A11 Bionic chip

and ….

We met Pynq!!

Why Pynq?

- Rapid Prototyping

- Open Source Community with growing support

- Concept of Interesting overlays providing great flexibility in functional implementation

- Base overlay provided a conducive environment to allow interface of Grove Sensors alongside video transmission over HDMI

- An easy-to-start with SoC for people with limited experience in the FPGA world and interested in leveraging the potential of FPGA

Pynq and its Utilization

1. Leveraged the video support provided in Base Overlay for Face Detect Operation using HDMI

1. Used a Logitech USB Webcam to capture video of a person

1. Utilized the Neural Network based Microsoft Azure Emotion API to detect facial expression of a person

1. Transmitted facial expression information seamlessly over HTTP Protocol

1. Used Jupyter notebook for development, allowing segmented code executions, making it easier for debugging sections of code effectively

Future Scope

- To implement a custom training model that learns human facial expressions over time, enabling more accurate, varied and apt Emoji selection with power of customizable and reconfigurable hardware

- Extend the model to include two Pynq Boards connected together and multiple overlays- one running the training model, and the other running the Video Processing Algorithms

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Cherished Moments…

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Naveen Purushottam
Dustin

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Glad to be part of such an early stage open source project!