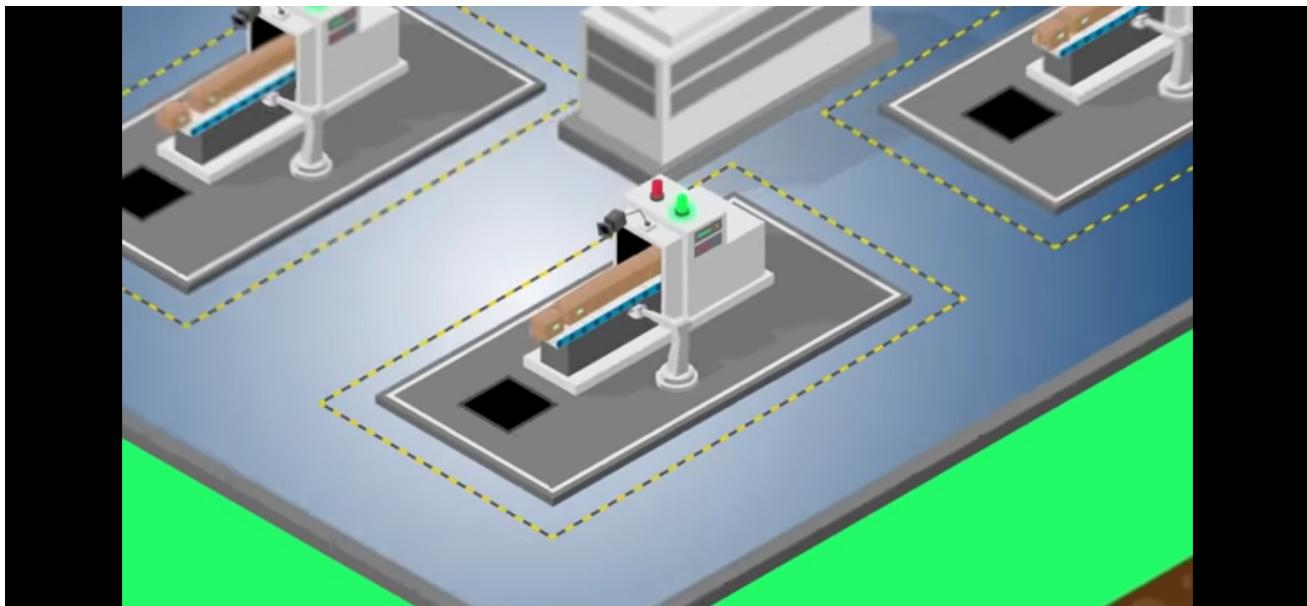


## DAILY ASSESSMENT FORMAT

Date:	01-06-2020	Name:	Jagadeesha Hegde
Course:	DIGITAL DESIGN USING HDL	USN:	4AL17EC036
Topic:	Industry Applications of FPGA FPGA Business Fundamentals FPGA vs ASIC Design Flow FPGA Basics – A Look Under the Hood	Semester & Section:	6th A-sec
Github Repository:	Jagadeesha-036		

### FORENOON SESSION DETAILS

Image of session



## ASIC/ASSP Advantages & Disadvantages

PROS		CONS	
\$	Low cost per unit (high-volume mass production)	\$\$\$	High non-recurring engineering (NRE) cost
⚡	Low power consumption	🔗	Not flexible – cannot be upgraded once hardened
⌚	High performance/ clock speed	❖	Complex design flow
📦	Small unit size	⏳	Long time to market

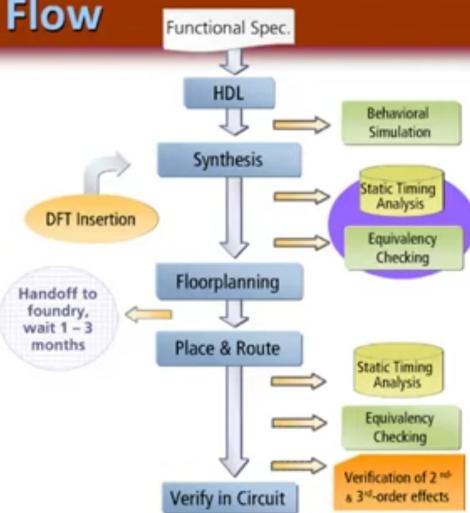
Programmable Solutions Group



3

## ASIC Design Flow

- ASIC tools are generally driven by scripts
- Post-synthesis static timing analysis and equivalency checking are musts for sign-off to foundry



**Report – Report can be typed or hand written for up to two pages.**

### What is FPGA?

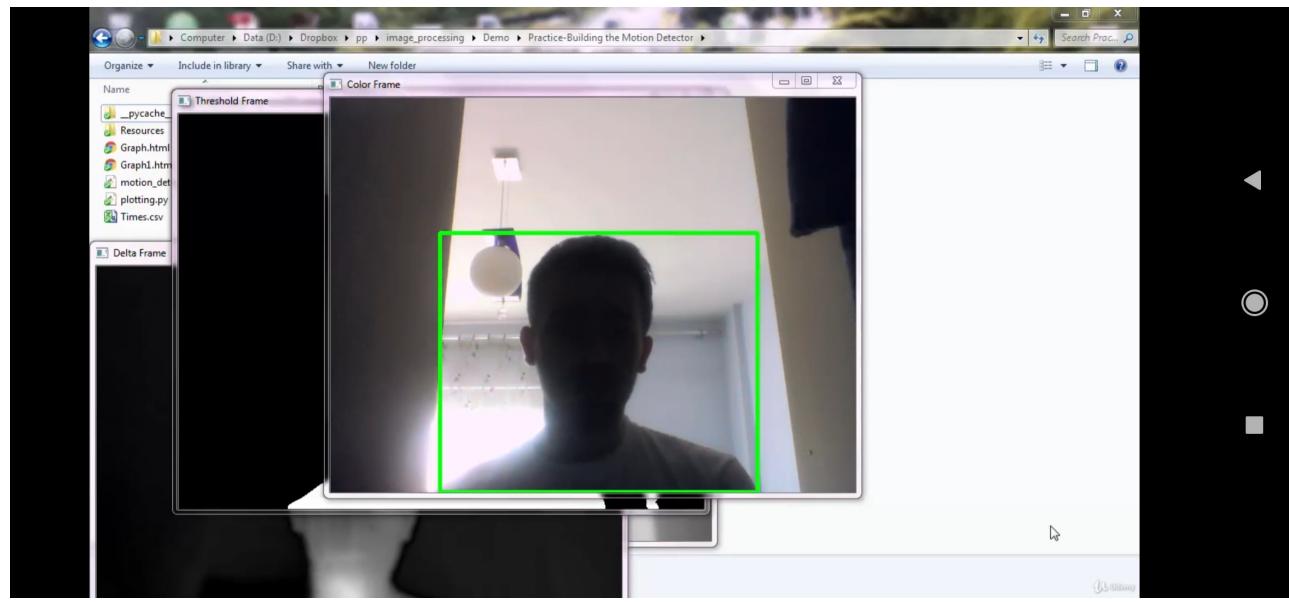
An FPGA is a (mostly) digital, (re-)configurable ASIC. I say mostly because there are analog and mixed-signal aspects to modern FPGAs. For example, some have A/D converters and PLLs. I put re- in parenthesis because there are actually one-time-programmable FPGAs, where once you configure them, that's it, never again. However, most FPGAs you'll come across are going to be re-configurable.

The advantage is that you're not tying up a centralized processor. Each function can operate on its own. Large quantities of deterministic I/O – the amount of determinism that you can achieve with an FPGA will usually far surpass that of a typical sequential processor. If there are too many operations within your required loop rate on a sequential processor, you may not even have enough time to close the loop to update all of the I/O within the allotted time. Signal processing – includes algorithms such as digital filtering, demodulation, detection algorithms, frequency domain processing, image processing, or control algorithms.

Date: 01-06-2020 Name: Jagadeesha Hegde  
Course: The Python Mega USN: 4AL17EC036  
Topic: Application 6: Build a Semester & 6th A-sec Webcam Motion Section: Detector

#### AFTERNOON SESSION DETAILS

##### Image of session



The screenshot shows a software application window with a dark theme. On the left, there is a sidebar titled "Navigation" containing several icons and labels: "Navigation", "File", "Edit", "View", "Search", "Find", "Replace", "Copy", "Paste", "Delete", "Format", "Tools", "Help", and "About". Below this is a "Recent Files" section with entries: "file1.sas", "file2.sas", "file3.sas", and "file4.sas". The main area of the window is a code editor with the following content:

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## **Report – Report can be typed or hand written for up to two pages.**

Motion detection is the detection of the change in the position of an object with respect to its surroundings and vice-versa. Buckle up your seat belts to drive through this motion detector application along with me and your lovable Python.we may be able to perform the following tasks using this application, though the list is non-exhaustive:

- 1) Find in front of screen time during working from home.
  - 2) Monitor your child's in front of screen time.
  - 3) Find trespassing in your backyard.
  - 4) Locate unwanted public/animal movements around your room/house/alley and what not.....Photo by Williapm Thomas on Unsplash
- Hardware Requirements: A computer with a webcam or any type of camera installed.

STEP 1: Import required libraries:

STEP 2: Initialize variables, lists, data frames: You will get to know when each one of the above will be required in the below code.

STEP 3: Capture the video frames using webcam:OpenCV has in-built functions to open the camera and capture video frames. “0” denotes the camera at the hardware port number 0 in your computer.If you have multiple cameras or external cameras or a CCTV setup installed, you may provide the port number accordingly.

STEP 4: Converting the captured frame to gray-scale and applying Gaussian Blur to remove noise:We convert the color frame to gray frame as an extra layer of color is not required. GaussianBlur is used for image smoothing and it will, in turn, enhance the detection accuracy. In the GaussianBlur function, for the 2nd parameter, we define the width and height of the Gaussian Kernel and for the 3rd parameter, we provide standard deviation value. These are set of higher order differential calculus theorems, so you may use standard values of the kernel size as (21,21) and standard-deviation as 0.

