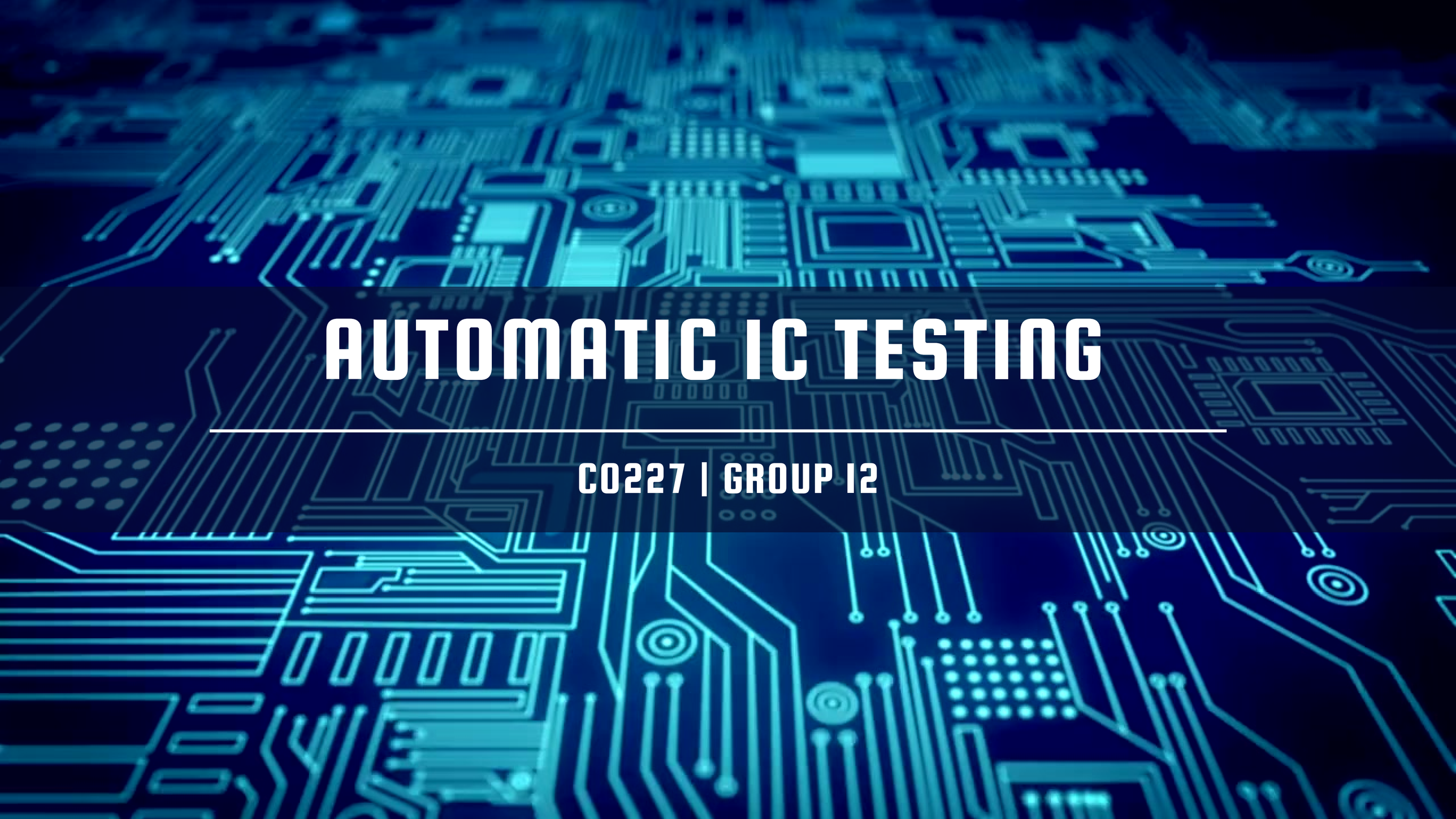


AUTOMATIC IC TESTING

C0227 | GROUP 12

Meet Our Team

Asela

Janitha

Nuwantha

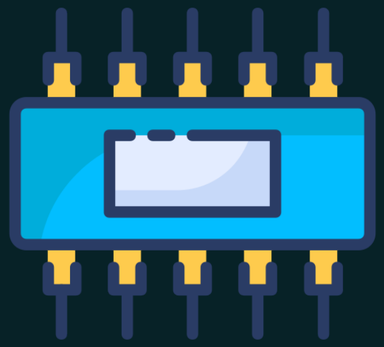
Ashan

Table Of Content

Problem Overview

Why IC testing?

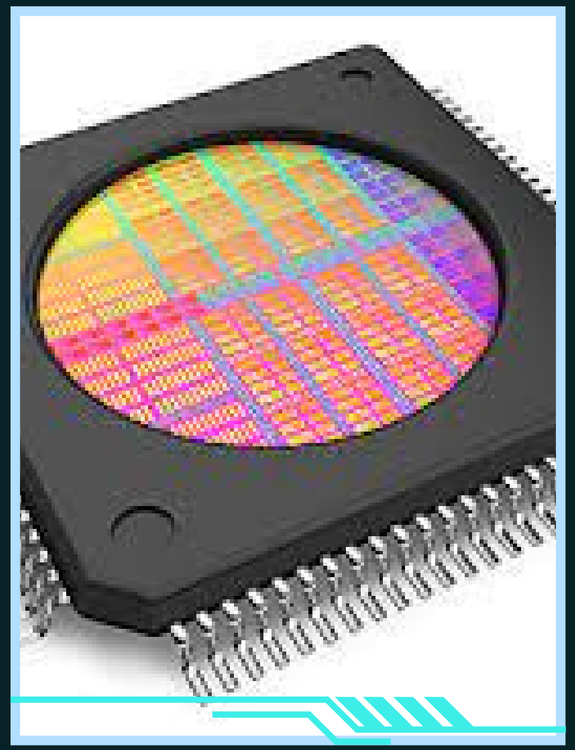
- Ensuring Functionality
- Quality Control
- Reliability Enhancement
- Cost Management



Problem Overview

Problems of Manual Testing

- **Labor Intensity**
- **Human Error**
- **Scalability**
- **Complexity**
- **Cost and Efficiency**



Solution Architecturre

1. There is a Zero Insertion Force (ZIF) Socket to configure the IC.

2.Set up a User Interface on computer that takes IC number as the User Input.

3.Then, fetch the related data using external library belongs to that particular IC. That data includes testing pattern, pin configuration and all required other data.

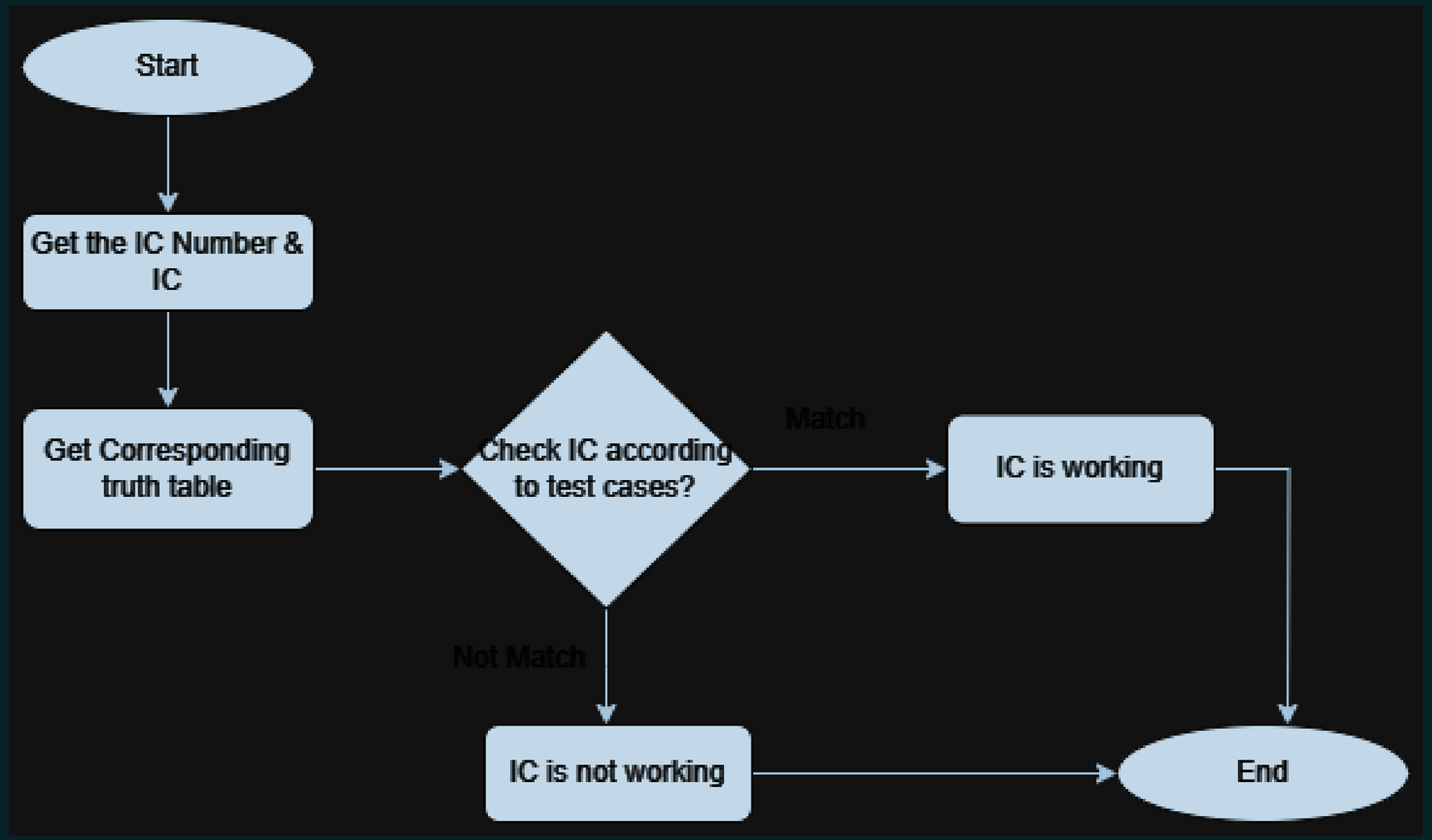
Solution Architecturre

4. Data pass to the FPGA using USB cable.

5. Test the IC with the testing pattern and compare expected output.

6. Finally, display the result and if there is an error indicate the gate that has error.

Control Flow



Technology Stack

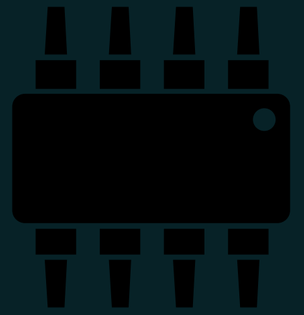
What Technologies we are going to use ?

FPGA Platform

- Selection of FPGA Platform : Xilinx
- Development Environments : Vivado

HDL (Hardware Description Language):

- Verilog



Design Entry and Simulation:

- Vivado

Testing and Verification:

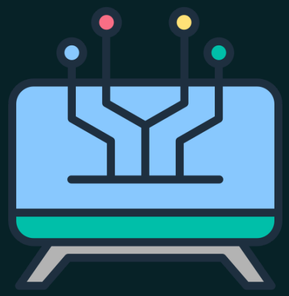
- Vivado

Technology Stack

What Technologies we are going to use ?

Hardware Interfacing

- Communication Protocols like SPI, I2C, UART, GPIO

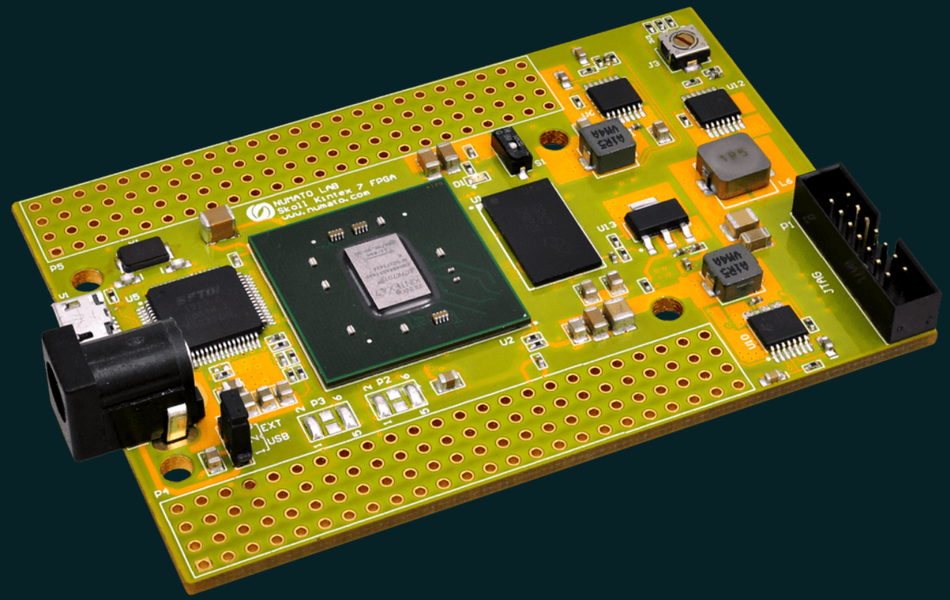


Version Control

- Git

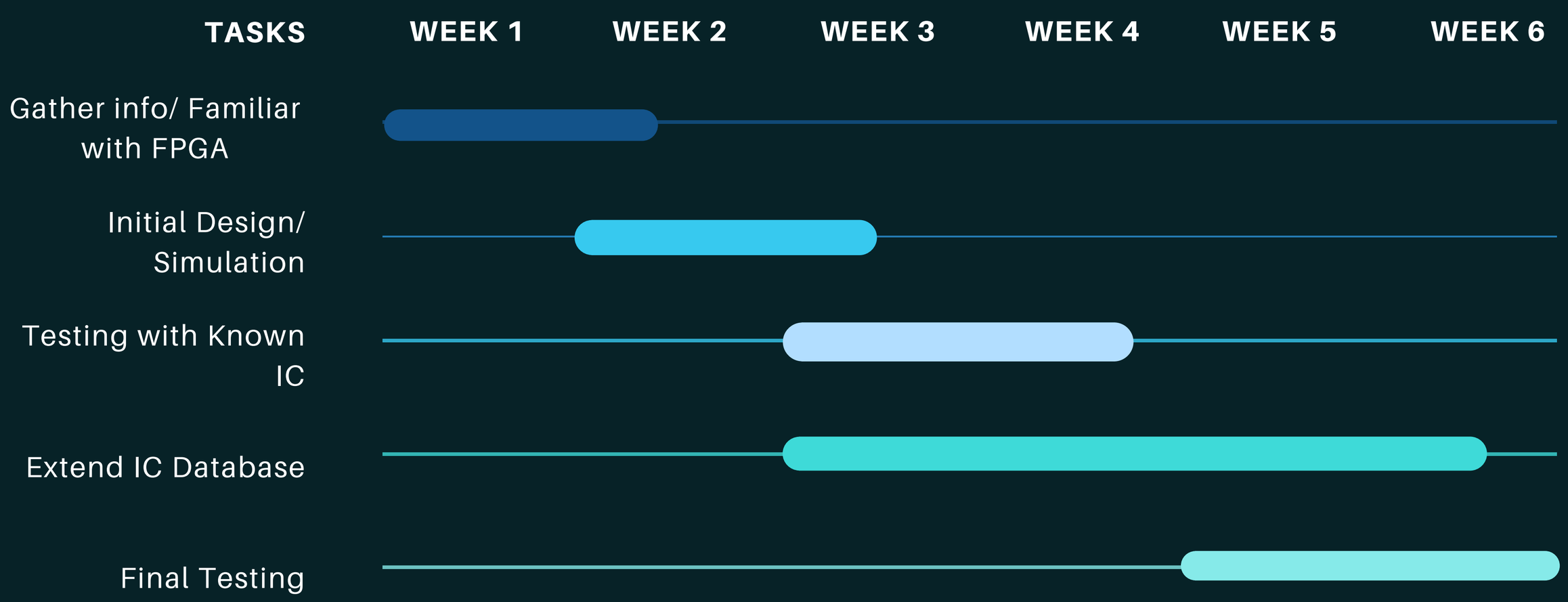
Components

- FPGA Development Board
- Testing ICs
- ZIF Socket
- USB Interface
- Power Supply



Project Timeline

Target: 08, October 2023



Extendibility & Scalability

Automatic IC Identifying

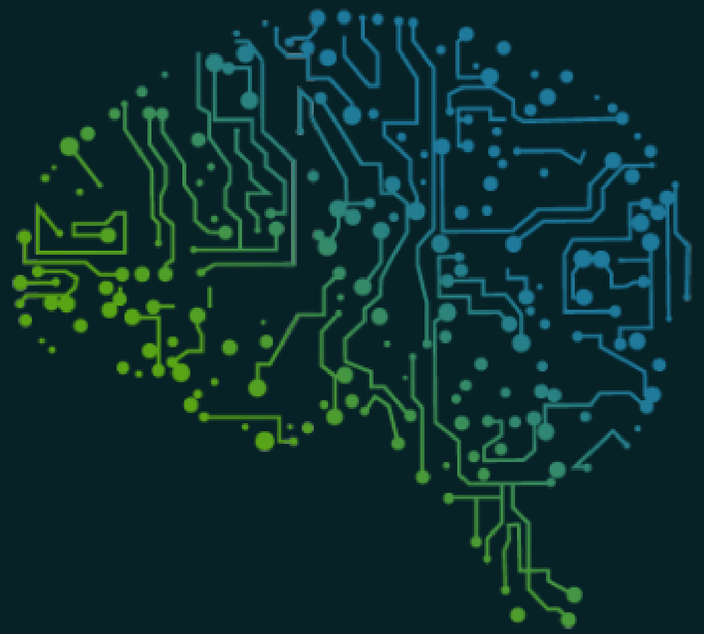
- Extend to identify unknown IC modules

Display the Working accuracy of the IC

- Reduce Execution Time, Voltages etc

Cloud Intergration

- Integrate new IC types easily



GitHub repo

https://github.com/cepdnaclk/e19-co227-Automatic-IC-Testing

Q & A ?

THANK YOU!