Mohamed Ashraf Elsheikh

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Summary

Computer Engineer found passion in Digital Design with a strong knowledge in Embedded Systems, ASIC design methodologies and verification techniques. Possessing comprehensive knowledge in digital circuit design and RTL coding. Proficient in industry-standard design tools and methodologies. Eager to learn more and use my knowledge and skills to contribute effectively to innovative digital design projects and Embedded systems.

Skills

Digital Design:

- Digital Design targeting ASIC
- Optimization techniques favoring area, speed, or power consumption
- STA, CDC, and DFT principles
- Communication Protocols (UART, SPI & I2C)
- Design Verification & UVM
- Troubleshooting Skills.
- Dealing with Microcontrollers and Sensors Datasheets.
- Develop low-level drivers.

Tools

- Synopsys Flow Tools (DC, Formality, ICC2, PrimeTime, VCS, Verdi)
- Siemens Flow Tools (TannerEda Tools, Calibre, QuestaSim)
- Cadence Virtuoso
- Eclipse
- Microchip

Software & HDLs

- SystemVerilog/ Verilog
- TCL Scripting
- Assembly
- C++
- C
- Data structure

Experience

Digital IC Design and Verification Trainee - 09/2023 - Ongoing
AUC CND

- Digital Design Flow for ASIC: Verilog Modeling, Synthesis, Timing Analysis and Optimization, Power Optimization, CTS, PnR, DFT, and Sign-Off.
- Full-Custom Design Flow: Arithmetic Blocks, Memory Design, Interconnects, Clock Generators, System-Level Integration, Power and Timing Optimizations, and Signal and Power Integrity.
- Digital Verification: SystemVerilog Concepts, Code & Functional Coverage, Assertions ,OOP, and UVM.
- Digital Testing: Testable Systems, Pattern generation, and BIST techniques.

Projects

Graduation Project:

- **Title:** Wireless interconnected smart home with IoT.
- **Description:** The project is a miniature model of a Smart Home System using some sensors like Motion, Gas and Temperature Sensors interconnected with each other wireless using ESP and transferring the data through a server using Rasberry Pi using MQTT protocol.
- **Supervisor:** Dr Walid Elshafai.
- **Project grade:** Excellent.

AUC CND Nanodegree Projects

- **Custom-Architecture Microprocessor Design** using Verilog and testing on FPGA.
- **Full-Custom (Layout) Full Adders:** Designing and implementing the layout of two 4-bit Full Adders (Carry-lookahead and Carry-propagate Adders), and performing DRC, LVS, PEX, and Post-Layout Simulations using Siemens Flow.
- **ASIC Flow of an I2C Master & a Programmable Interval Timer unit** Using Synopsys Flow Tools.
- **Custom Layout Design and Implementation 4-bit Microprocessor, 4-bit PRNG & Various 4-bit Full Adders** Using Siemens Flow
- **Verification of an SPI Slave & a FIFO module** Using SystemVerilog and Synopsys Tools.

Embedded Systems Projects

All projects were designed and implemented using ATmega, Eclipse and Proteus.

- **Stop-Watch:**
  Developing a system that controls the stop-watch time and displays it on 7-segments.
  Drivers: GPIO, Timer, External Interrupts and 7-Segement - Microcontroller: ATmega16.

- **Distance Measuring System:**
  Developing a system that measures the distance and displays it on LCD.
  Drivers: GPIO, ICU, Ultrasonic Sensor and LCD - Microcontroller: ATmega16.

- **Door Locker Security Systems:**
  Developing a system to unlock a door using a password.
  Drivers: GPIO, Keypad, LCD, Timer, UART, I2C, EEPROM, Buzzer and DC-Motor - Microcontroller: ATmega16.

- **Fan Speed Controller with Temperature:**
  Developing a **Real-Time system** controls the speed of a fan depending on the temperature and displays it by LCD connected to another Microcontroller using I2C.
  Drivers: GPIO, ADC, PWM, I2C, LM35 Sensor, LCD and DC-Motor– Microcontroller: ATmega32.

Education

Bachelor of Engineering: **Electronics and Computer Engineering - 2022**
FACULTY OF ENGINEERING, Ahram Canadian University
Grade: Good

Courses

- Digital IC Design by Dr. Hesham Omran .
- Embedded Systems Diploma (under supervision of engineer Mohamed Tarek).
- IT Diploma (Route IT Training Center).