

Ali Dahir: FPGA Developer

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PROFESSIONAL SUMMARY

Entry-level Electrical Engineer and FPGA Developer with hands-on experience in digital hardware design, embedded systems, and full-stack web development. Proficient in Verilog, C/C++, and Python, with a strong foundation in RTL design, simulation, and microcontroller-based projects. Eager to contribute to innovative hardware design teams working on high-speed digital systems and IP development.

EDUCATION

Carleton University

B.Sc. Electrical Engineering

Ottawa, ON

June, 2024

- IEEE Student Branch (2024)

PROJECTS GitHub Portfolio (Videos + Source Code): [https://github.com/AliDa-Eng]

Hardware Based Timer (FPGA Basys 3 Xilinx, Verilog HDL, Vivado)

- Designed and implemented a **hardware-based timer** using **Verilog HDL**, integrated **IP cores** for **clock management**, and optimized design constraints.
- Developed a **state-machine-based control system** to handle timer operations.
- Simulated and verified logic** using Vivado to reduce power consumption.
- Demonstrates clock signal design, state machines, and hardware simulation**

Autonomous Maze Solving Car (C, Arduino, Embedded Systems)

- Developed an **Arduino-controlled robot** for **autonomous maze navigation**.
- Implemented **ultrasonic sensors** to detect obstacles and **real-time path planning**.
- Programmed **state-machine logic** for movement (left/right/forward/backward).
- Fine-tuned **sensor thresholds** for accurate decision-making and obstacle avoidance.

FPGA Pan-Tilt Object Tracking System (Basys 3 Xilinx, Verilog HDL, Servo Motors, Arduino)

- Developed a **real-time servo control system** using **Verilog** to generate **PWM signals** for pan/tilt motion.
- Interfaced the **FPGA** with an **Arduino** connected to a **Pixy2 vision sensor**, which transmitted object coordinates via **UART**.
- Implemented **FSM logic** in **FPGA** to process (X, Y) tracking data and continuously adjust servo angles.
- Demonstrated **closed-loop control**, **UART communication**, and hardware coordination across **FPGA** and microcontroller platforms.

SKILLS & INTERESTS

- Languages:** Verilog, Vivado Design Suite, C, Python, JavaScript, PHP
- Embedded Systems & Hardware:** FPGA (Basys 3, Altera MAX V), Arduino, Microcontrollers
- Software & Tools:** Vivado, Quartus, MATLAB, Git, MySQL, Linux, OpenAI API
- Concepts:** RTL Design, Digital Logic, State Machines, OOP, Pathfinding (Dijkstra)

WORK EXPERIENCE

Prodigy Services

Full Stack Developer

Jul. 2024 – Present

Barrie, ON

- Developed ProdigySecure, a full-stack web app for document and user management.
- Improved backend logic and optimized SQL queries, increasing performance by 25%.

Honda

Wiring Zone Tech

May. 2022 – Jan. 2023

Alliston, ON

- Supported wiring, fuel, and crash sensor systems on Honda Civic production line.
- Conducted tests, logged procedures, and complied with ISO documentation standards.
- Operated diagnostic tools (Airbag, Torque, Fuel tank assist) to troubleshoot systems.
- Contributed to failure root-cause analysis and process improvement.

References

Company Name	Contact Name	Relationship	Contact info
Honda	Peter R.	Supervisor	Available upon request
Honda	Robert M.	Team Lead	Available upon request
Honda	Gary H.	Colleague	Available upon request
Prodigy Services	Moe F.	Manager	Available upon request
Prodigy Services	Subear A.	Developer / Colleague	Available upon request
Carleton University	Yosef K.	Professor / Mentor	Available upon request
Carleton University	Mejd A.	Project Partner	Available upon request

Note: Contact details for references are available upon request to respect the privacy of the individuals listed.