Hardware Engineer / Electrical Design / Board Design

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**Summary**

* **B.Sc. in Electrical Engineering** from Tel Aviv University
* Developed projects in **VLSI** and **board design**, **autonomous navigation systems**, **communication** and **computer systems**, and **computer architecture**.
* Skilled in programming languages such as **C, Python, Verilog**, and simulation tools as **MATLAB**, **Orcade,** and **PSPICE**.
* Skilled in designing and building **linear analog** and **digital circuits**, with knowledge in using lab equipment such as an **oscilloscope**, **spectrum analyzer, signal generator, etc**.
* Designed and built **ALUs**, simplified **DLX processors,** and floating-point algorithms using **Cadence Virtuoso,** Vivado, **Xilinx,** and **VHDL**.
* Capable of **full hardware lifecycle**: schematic, layout, simulation, bring-up, testing, and documentation.
* A fast and self-learner, a team player, eager to contribute to challenging engineering roles.

**Education**

2018 - 2024 **B.Sc. in Electrical Engineering**, Tel Aviv University.

* **Specialization:** Communication, Computer Systems, VLSI Design.
* **Relevant courses:** digital communication, communication circuits, communication systems, VLSI Circuit and layout Design, computer's vision and architecture, machine learning, systems programming, analog, digital and linear circuits, statistic and digital signal processing, Random Signals and Noise, c and python languages courses, advanced labs in communication computer vision and electronics.

**Academic Projects**

**Autonomous Navigation System for IL-Sail Boat (my final project)**

* **Developed a navigation system** for Tel Aviv University’s autonomous IL-Sail boat for the March 2023 RoboBoat competition in the USA.
* Utilized the **TurtleBot 3 simulation** in the **ROS framework** to simulate autonomous navigation.
* Programmed a **Python script** to guide the robot to multiple target points while avoiding obstacles, based on data from the CV team.
* Implemented **mission control**, sending velocity and directional commands to ROS for seamless integration with the control team.
* Automated a **mission execution loop**, progressing through multiple points until completing the course.
* In the end, we got 2nd place in the competition.

**Bit Arithmetic Logic Unit (ALU) Design (VLSI PROJECT)**

* **Designed a simplified 4-bit ALU** using **Cadence Virtuoso**, focusing on layout design.
* Created layouts for **XOR gates** and registers, ensuring **DRC** and **LVS** compliance.
* Wrote a **testbench** to verify the ALU’s operation and correctness.

**FPGA Programming in Electronics Lab**

* Programmed an **FPGA** board using **Vivado** and **VHDL** to implement functions like counting button presses and resetting on a separate button.

**Floating Point Processor with Tomasulo Algorithm** (computer architecture)

* Designed a floating-point processor implementing the **Tomasulo algorithm** to execute operations like addition, subtraction, multiplication, and division.
* **Coded** the processor in **C**, including test cases to verify functionality.

**Simplified DLX Processor(CPU) Design**

* **Designed** and **tested** a simplified **DLX processor** capable of executing multiple operations.
* Implemented the processor using **VHDL** and schematic blocks in **Xilinx tools**.

**Professional Knowledge**

* **Hardware and Circuit Design**: analog/digital circuit design, assembly programming, VLSI, pipeline structure, and algorithms.
* **Software and Simulation Tools**: experience working with MATLAB, OrCAD PSpice, Vivado, Cadence Virtuoso, Xilinx, Microsoft Office.
* **Programming Languages**: experience in programming with C, Verilog, Python, and VHDL.
* **Computer Systems and Architecture**: Knowledge of computer structure, computer architecture, and VLSI design principles.
* **Signal processing:** Proficient in applying signal processing techniques, including Discrete Fourier Transform (DFT) and spectrum analysis, for data interpretation and analysis.
* **Lab Equipment**: Spectrum analyzer, signal generator, oscilloscope, function generator, multimeter, building electronic, digital, and analog circuits.

**Awards**

2nd place in the March 2023 RoboBoat competition in the USA.

**Languages**

**Hebrew** - high |  **English** - high |  **Arabic** - native