

# Max Kotas

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## Education

**Bachelor of Science in Electrical Engineering (Minor in Mathematics)** Texas A&M University

**Graduation Date:** December 2024

**Relevant Coursework:** Digital System Design, Circuit Theory, Signals & Systems, Random Signals & Systems, Electronics, Computer Architecture & Design, Electric Energy Conversion, Security of Embedded Systems, Electronic Motor Drive, DSP-Based Motion Control, Microwave Circuits & Systems, Operational Amplifiers, Communications & Cryptography

**PISD Academy High School**

STEM-Based Project-Based Learning School

Focused on hands-on learning in science, technology, engineering, and mathematics (STEM).

## Technical Skills

**Core Skills:** Embedded Systems, Control Systems, Circuit Design, RF Design, Motor Control, Filter design, digital signal analysis (MATLAB, Python), PID controllers, robotics platforms, Oscilloscopes, logic/spectrum analyzers, Hardware-in-the-Loop (HIL)

**Programming:** C/C++, Python, JavaScript, Assembly, Verilog

**Tools:** Altium Designer, KiCad, Arduino, ESP32, Node.js, MongoDB

**Platforms:** Raspberry Pi, Xilinx ISE, Wireshark, Git/GitHub

## Notable Projects

For more details about these and other projects, visit my portfolio at [maxkotas.com](https://maxkotas.com).

### FPGA-Accelerated Embedded Neural Network

2025

*Skills: FPGA, Neural Networks, HLS4ML, Qkeras, TensorFlow*

- Developed a low-power FPGA-accelerated neural network for real-time inference on the MNIST dataset.
- Utilized TensorFlow for model training, Qkeras for quantization, and HLS4ML for FPGA hardware integration.
- Optimized for power efficiency and inference speed on embedded systems using Vivado HLS.

### BLDC Motor Control System Design

2024

*Skills: Embedded Systems, Control Systems, DSP, Power Electronics*

- Designed BLDC motor control using six-step voltage modulation and Hall-effect sensor feedback.
- Implemented PI control for stable speed regulation and demonstrated smooth direction reversal.
- Explored future enhancements like sensorless and FOC control for robotics applications.

### IoT-Enabled Beverage Dispensing System

2024, 2025

*Skills: IoT Systems, Automation, PCB Design, Motion Control*

- Built MQTT-controlled beverage dispenser with a custom PCB integrating ESP32 and motor drivers.
- Designed stepper motor-driven linear motion system and 3D-printed components for liquid dispensing.
- Demonstrated practical automation skills with applications in smart systems.

## Professional Interests

Automation, Robotics, Control Systems, Embedded Systems, Power Electronics

## Community Engagement

### Volunteer, Bryan Food Bank

2024, 2025

- Assist in sorting, packing, and distributing food to underserved community members.
- Collaborate with staff and other volunteers to organize donation drives and ensure smooth operations.
- Develop communication and teamwork skills while giving back to the local community.

## Personal Interests

International Travel, Hiking & National Parks, Music (Guitar)