

Wyatt Hansen

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SKILLS

Programming Languages: C / C++
Frameworks & Protocols: SPI, I2C, USART, GPIO, STM32 HAL, RTOS, FreeRTOS, ROS
Hardware: STM32F4 Series, ARM Cortex M, Nucleo, 16x02 LCD, Tiny RTC, Arduino
Development Tools: STM32CubeIDE, Git / GitHub, Agile, Linux, Multisim

PROJECTS

STM32 Robotic Arm Project

- 3D Printed Robotic Arm with a **STM32** micro-controller, integrating a smaller robot as the primary controller using a Super Loop Control methodology.
- Using STM32 **HAL**, I mapped the readings of the Potentiometers using the **ADC** Peripheral to control the servos through a Servo Driver with **I2C** communication.

Embedded Driver Development

- Utilizing an STM32 Nucleo-F446RE I implemented the drivers for the **GPIO**, **SPI**, **I2C**, and **USART**.
- Successfully completed a Clock and Calendar Display on an 16x02 LCD using an Tiny RTC.

Task Scheduler with Round Robin Prioritization

- Utilizing a Nucleo-F446RE programmed in **C** to create tasks to independently toggle LEDs using **Register Manipulation** of the GPIO available.
- Inline Assembly was used to implement the Process Stack Pointer for the tasks and Main Stack Pointer for the scheduler.
- **Debugging** was done by enabling the Usage, Memory Management, and Bus Faults.

Krisys Line Following Robotics

- Designed and developed an autonomous car utilizing a Xilinx BASYS 3 FPGA, **Multisim**, 2 DC motors, and Capacitance Sensors, enabling it to autonomously track and follow a 5V current-carrying wire on the floor.
- Created a State Machine and Controller Decision Table to derive the **PWM** Duty Cycles for each motor.
- Built the State Machine, Frequency Divider, PWM and Debugging logic in Multisim circuitry.

EDUCATION

Texas A&M University, College Station, Texas December 2021
Bachelor of Science in Computer Engineering
Minor in Cyber Security

Lone Star University, Kingwood, Texas May 2017
Associate of Arts

Fast Bit Embedded Courses November 2023 – March 2024
• Completion of Embedded Driver Development, Mastering RTOS, and Embedded Systems Programming

WORK EXPERIENCES

Genesis Dimensions, Houston, Texas Summers of 2017, 2020, and 2021
Engineering Intern

- Successfully installed and implemented Taiga, an open-source Agile project management tool, on in-house servers, enhancing project coordination and management.
- Assisted in the manufacturing and integration of industrial control panels for a Kuka Robot and a Material Flow Control System

Arrington Automation, Houston, Texas August 2018 – August 2019
Engineering Intern

- Collaborated with a team of engineers to contribute to the design, testing, manufacturing, and integration processes of industrial control panels for control systems.