

# Nicholas Morgan

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## Education

Iowa State University | Ames, IA

August 2020 – December 2023

### Bachelor's of Engineering - Computer Engineering & Minors in Cybersecurity

Ranked as the #1 in the state of Iowa for its department of computer science. Iowa State has been leading computing since Atanasoff's invention of the first electronic computer in 1937.

**Relevant Courses:** Real-Time Systems, Electrical Engineering, Computer Architecture, Programming Logic, Data Structures and more.

## Skills

**Platforms & Operating Systems:** Linux, MacOS, Windows

**Programming:** C/C++, C#/.NET, Java, Python/MicroPython, Bash, JavaScript, HTML, CSS, Git.

## Projects & Notable Achievements

### iRobot Mars Aerospace Rover | iRobot inspired the first Micro Rovers used by NASA

- Championed a dynamic team of four in successfully programming an iRobot for precise navigation through obstacles while implementing distance measurement for navigational functionality.
- Demonstrated proficiency in embedded systems programming using C while honing collaborative abilities.

### Arduino Advanced Real-Time Security System Development

- Orchestrated the integration of cutting-edge sensors—including *motion*, *sound*, and *distance sensors*—to amplify the system's functionality and responsiveness.
- Engineered a robust solution on the *ESP32 platform* utilizing *FreeRTOS*, coupled with *Arduino*, to deliver seamless task management, ensuring optimal performance, and reliability.
- Spearheaded the implementation of data acquisition from sensors through ESP8266, ensuring swift and seamless real-time data retrieval for prompt threat detection and response.

### Arinc429 Portable Receiver Application and Firmware Development

- Delivered cross-functional collaboration between department members to conceptualize and execute firmware for the *ESP32S3* chip, facilitating seamless BLE communication with mobile devices for *Arinc 429* data transmission.
- Leveraged *ESP-IDF*, *C*, and *Python* to craft robust firmware solutions.
- Pioneered the creation of a user-friendly Flutter application tailored for *Arinc 429* label reading and preliminary decoding, enhancing accessibility and utilization for end-users.

## Experience

Digital Transformation, Industry 4.0, and Industrial IoT | Crystal Lake, IL

May – August 2023

### Computer Engineering Intern - Mr. IIoT

- Elevated, modernized, and upheld the Fanuc Driver codebase, guaranteeing seamless operation and adaptability. Employed C#/.NET for enhancements.
- Revamped Beckhoff PLC and HMI code to maximize efficiency, consolidating axles and stamps from 3 to 1 for optimal performance.
- Executed an intuitive front-end interface via Node-Red for SHARC data integration into a database, refining data precision and usability.