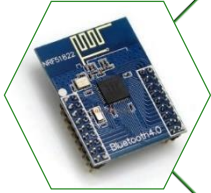


CANDICE IP

PORTFOLIO

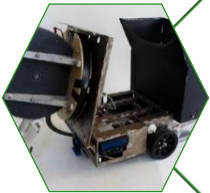


Alpine Network Sensor

Programmed an ARM Cortex M0 in a nRF51822 Bluetooth Microcontroller for temperature and humidity data logging.

Language: C

Other: UART communication, I2C protocol, PuTTY, Altium, energy budget analysis, Raspberry Pi, Arduino Nano

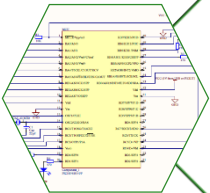


Autonomous Robot for Object Retrieval

Designed and fabricated the electrical systems and software for an autonomous robot. It's tasks included line-following, object detection and retrieval. The robot was built from scratch and programmed with a modified Arduino. See: goo.gl/7Vdaqm

Language: C

Other: PID control, finite-state machine, IR circuits, H-bridge circuits, soldering, laser-cutting, 3D printing



Mechatronics Sleepsmart Mattress

Developed a smart-mattress using 3-axis accelerometers and digital temperature sensors to detect posture and body temperature. Programmed using a PIC18F4550 and collected data in LabVIEW and MATLAB.

Language: C++, C, LabVIEW, MATLAB

Other: SPI, Altium, hardware prototyping, PuTTY

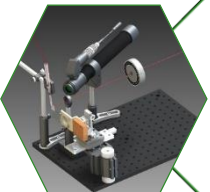
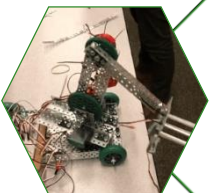


Image Processing and Auto-Alignment

Used software to align a laser beam to a chip through actuating piezo-stages. Image processing was accomplished in MATLAB and stage actuation was done through LabVIEW. Publication: doi.org/10.1063/1.4929408.

Language: LabVIEW, MATLAB

Other: Experimental set-up, high-voltage

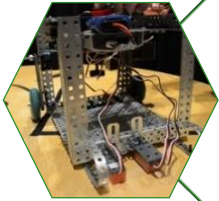


Arduino Robots – Engineering Competition 2017

Developed an autonomous robot prototype of the Canadarm within 8 hours for a university competition using an Arduino Uno and VEX components. The robot was judged on its strength, precision, and speed. We placed 2nd out of 7 teams. See: git.io/vx6Rb

Language: C

Other: PID control, finite state-machine

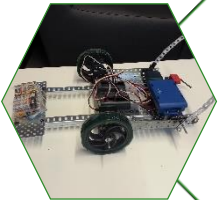


VEX Robotics – Western Engineering Competition 2016

Developed an autonomous robot within 8 hours using VEX, imitating to save casualties within an arena. It was judged by its navigation techniques, precision, and speed. We were commended for its design and ingenuity in delivering its tasks. See: git.io/vx6Rb

Language: RobotC

Other: PID control, finite state-machine

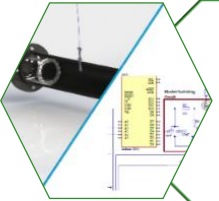


VEX Robots – Engineering Competition 2015

Developed autonomous robots for a university competition tasked to move freight to its final location using VEX components. It was judged based on its autonomy, precision, and strength. We came in 1st out of 8 teams. See: git.io/vx6Rb

Language: RobotC

Other: PID control, finite state-machine

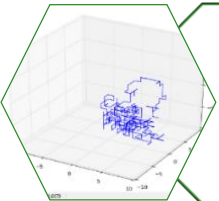


Thermal Time-of Flight Flow Meter

Used thermocouples and an Arduino to obtain temperature data along pipe to determine helium flow rate within the pipe. Data was processed in MATLAB.

Language: C, MATLAB

Other: Hardware and software noise reduction, real-time data analysis

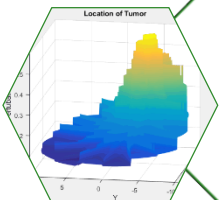


Python Simulations and Animations

Programmed a 3D random walk as an animation to learn how to use Python. Animated other processes such as growing Fibonacci spirals and simulating elastic collisions.

Language: Python

Packages: numpy, matplotlib

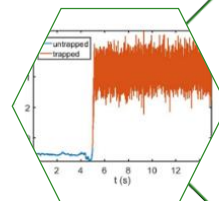


Electrical Impedance Tomography Imaging

Implemented finite element analysis techniques in to solve the mathematical Greens Function of a boundary condition problem applicable to EIT. See: git.io/vxP3h

Language: MATLAB

Other: Finite element analysis, data visualization



Analysis on Time-Series Data from Optical Traps

Performed autocorrelation analysis to characterize signals from optically trapping individual particles to determine the composition of a protein solution. Conference proceeding doi: [10.1117/12.2273358](https://doi.org/10.1117/12.2273358).

Language: MATLAB

Other: Experimental techniques, journal writing