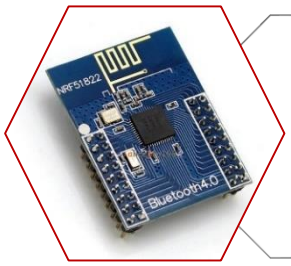
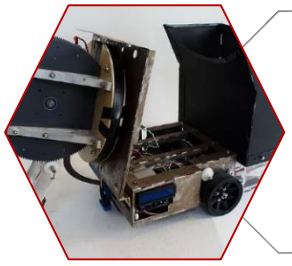
CANDICE IP
SOFTWARE/HARDWARE PORTFOLIO



Alpine Network Sensor

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

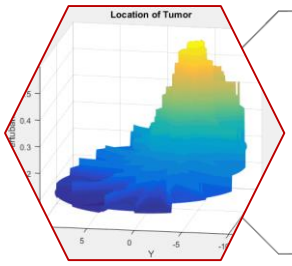
Language: C
Other: UART communication, I2C protocol, PuTTY, Altium, energy budget analysis, Raspberry Pi



Autonomous Robot for Object Retrieval

Designed the hardware for a line-following and object detection and retrieval robot and programmed with a modified Arduino. goo.gl/7Vdaqm

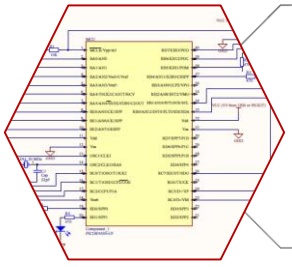
Language: C
Other: PID control, finite-state machine, IR circuits, H-bridge circuits, soldering, laser-cutting, 3D printing



Electrical Impedance Tomography Imaging

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

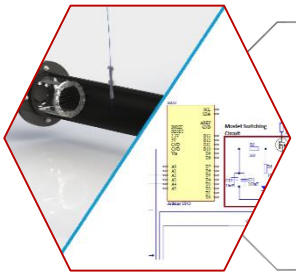
Language: MATLAB
Other: Finite element analysis, data visualization



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.

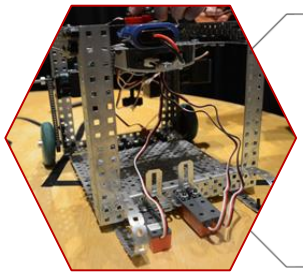
Language: C++, C, LabVIEW, MATLAB
Other: SPI, Altium, hardware prototyping, PuTTY



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.

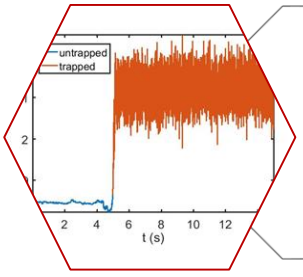
Language: C, MATLAB
Other: Hardware and software noise reduction, real-time data analysis



VEX Robots

Developed autonomous robots for university competitions tasked to detect and obtained items and tape follow with VEX components within 8 hours. git.io/vx6Rb

Language: RobotC
Other: PID control, finite state-machine



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.

Language: MATLAB
Other: Experimental techniques, journal writing

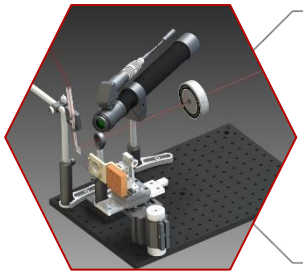
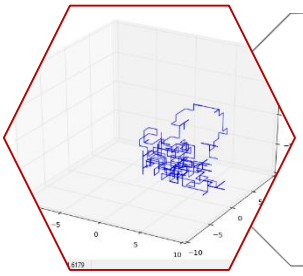


Image Processing and Auto-Alignment

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



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