JOEL EUI SUN AHN

Third Year Engineering Physics

SKILLS

PROGRAMMING	C++ C Java Python (Scipy) MATLAB Bash Windows NT
SOFTWARE TOOLS	SolidWorks Altium Git VC Excel Dreamweaver Photoshop
ELECTRICAL EQUIPMENT	PCB Design & Layout Oscilloscope Function Generator DMM
MECHANICAL EQUIPMENT	Laser-Cutter 3D Printer Waterjet-Cutter Lathe Mill Band Saw

TECHNICAL EXPERIENCE

OSI Maritime Systems

Junior Software Developer Co-op | JAN –APR 2017

Developed a desktop application prototype in C++ to parse data from over 5000 configuration files, convert all the data to pseudo-XML format and store as entries in a SQLITE database; and build a wrapper GUI in Qt. for convenient editing of the contents of the configuration files

Wrote a PowerShell script to perform “Lines of Code” metrics on company source code and with that data, create a organized recursive treemap diagram by interfacing with Microsoft Visio

Wrote scripts in Python to automate logging and formatting of maritime navigation data stored in Excel sheets and compiled all the info into a single convenient document

TECHNICAL PROJECTS

ENPH 253 ROBOTICS DESIGN COMPETITION

Pomme de Terror | JUL – AUG 2017

Constructed in six weeks a robot that could navigate a terrain course, collect deliverables, and send them down a zipline; and achieved *first* place on the day of the competition

Oversaw the software architecture on top of which teammates could develop their code and developed the PID algorithms that enabled the robot to line follow and safely navigate to the zipline

Drafted in OnShape CAD models of the robot’s chassis and four-bar linkage, using the laser-cutter and 3D printer to prototype components and troubleshoot any mechanical design flaws

Collaborated with teammate to create the IR filter circuit that would enable the robot to distinguish 10 kHz and 1kHz signals, as well as filtering out noise from ambient lighting

UBC SAILBOTS

Design Team | APR 2016 – JAN 2017

Developed PID algorithm and wrote Arduino code to control experimental wing sail to enable camber variation and data collection of sail performance

Operated UBC's Boundary Layer Wind Tunnel to collect aerodynamic data (e.g. lift and drag forces, wind knot, angle of attack); and constructed a polar diagram as scalable reference for future prototyping

Programmed NMEA-0183 parser library in C++ to receive data from CV7 ultrasonic wind sensor and have microcontroller convert data into CAN protocol messages

NEURAL NETWORK ELECTRONIC CAR

Personal Project | Summer 2016

Arduino-embedded electronic car capable of autonomous driving on pre-made course and manual driving via Bluetooth Serial connection

Implemented H-bridge motor drive using MOSFETs; and designed the PCB layout for easy implementation and soldering

Programmed Arduino to control motors and receive Bluetooth commands; and Raspberry Pi in python to collect and transmit pixel data via Internet Protocol to laptop server

Implemented neural network algorithm in MATLAB, and trained via backpropagation to receive feature-scaled pixel arrays and to correctly steer the car

RAINWATER HARVESTER SIMULATION

APSC 101 | FEB – MAR 2016

Implemented stochastic optimization of such parameters as weather data, storage tank size, and cost in MATLAB in order to create rainwater harvester system and deliver reliable potable water to remote BC communities

VOLUNTEER EXPERIENCE

RARE GENOMICS INSTITUTE

SHAD Intern | JUL – AUG 2014

Worked in a team of four to compile a repository in Excel of oncological molecular diagnostics technology, as well as promising cancer treatment research relating to the field of genomics

Reached out to and surveyed cancer survivors to write recommendations to improve their recovery process, including emotional stress therapy and an accessible database of treatment options

EDUCATION

THE UNIVERSITY OF BRITISH COLUMBIA

Bachelor of Applied Science in Engineering Physics | GPA: 87.2% | SEP 2015 – Present

INTERESTS

Neuroscience | Genetics | Triathlon | Robotics | Creative Writing | Electronics | Swimming | Languages | Kayaking