

Tilak Gupta

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tilakg7.github.io/

Education	Mechatronics Engineering , University of Waterloo (87% Average) Sep 2015 - Present <ul style="list-style-type: none">Relevant Courses: Computer Structures and Real-Time Systems, Sensors and Instrumentation, Embedded Systems (edX)
Skills	Firmware Embedded C/C++ Python Bash FreeRTOS Bare Metal GNU ARM Toolchain OpenOCD HAL Lib. UART, SPI, I2C, CAN PWM Keil MCB 1700 uVision CubeMX IAR Emb. Workbench Visual Studio Hardware ARM STM32 DMM Oscilloscope Power Supplies/Wave Generators Particle Core Arduino IoT Altium (Learning) Circuit Design Schematics Soldering Surface Mounts Hardware Debugging
Extra-curricular Experience	Waterloo Formula Electric , Firmware Team, University of Waterloo Jan 2017 - Present <ul style="list-style-type: none">Setup SPI communication with SD card for logging sensor values, benchmarked R/W speedsDeveloping firmware for 2018 vehicle Data Acquisition Unit
Work Experience	Control Systems Design Assistant , MedAvail Technologies Inc. May – Aug 2017 <ul style="list-style-type: none">Developed a bootloader capable of recovering firmware from external memory for pre-launch machineDesigned and tested an API to transmit node firmware over CAN during node updatesPorted code running in TI-RTOS to FreeRTOS on STM32 MCUsDebugged hardware issues arising from CAN and SPI using oscilloscopes and CAN analyzers Software Engineer , BDO Solutions Ltd Sep – Dec 2016 <ul style="list-style-type: none">Decreased web application load times by 50% by redesigning application in different softwareIncreased web security by enforcing HTTPS and preventing Cross Site Scripting attacksPerformed propensity modelling and regression analysis to predict insurance claims Software Engineer , Broad-Connect Telecom Inc. Jan – April 2016 <ul style="list-style-type: none">Engineered software for new web portal elements in a start-up like environmentIncreased security by developing two-factor authentication systemDesigned and wrote unit tests for applications to ensure maintainability and resiliency of code
Projects	Electric Carbon Fiber Bike (WIP, Construction Pending) <ul style="list-style-type: none">Designed a full size carbon fiber bike frame and planned electrical propulsion systemPlanning to design a custom in-house motor control unit to control BLDC motorDesigned a custom mono-shock rear suspension for off-road capability LED Ambient Lighting <ul style="list-style-type: none">Used the Particle Core to program LEDs to respond to weather and musicWrote firmware to transfer LED color commands using custom serial communication protocol Quadcopter <ul style="list-style-type: none">Built a quadcopter utilizing online resources and sourced parts (Frame, Motors, ESCs)Debugged hardware and firmware issues which arose during the build
Awards	<ul style="list-style-type: none">Waterloo President's Scholarship \$2,000Vex Robotics: Excellence in Design Rick Hansen Regional Winner Out of 36 teamsRick Hansen Science Department Award