Riju Sikdar

Available for **4 or 8 months**
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Proficiencies

Languages: Python, Async Python - Twisted & Flask, C, C++, Assembly, Java, VHDL, Git, Bash
Hardware: Arduino, Atmel-Atmega238, Espressif - ESP8266 & ESP32, Interfacing sensors, Vex Cortex, FPGA, RTOS, SPI & I2C interfaces, Raspberry Pi, 3D Printing
Software: MS Office Suite, Photoshop & Illustrator, Linux, SolidWorks & Fushion(CAD), MATLAB, LabVIEW, VMWare
APIs/Libraries: Google Maps, OpenCV, Spotify, PyGame, Leap Motion SDK
Web Development: HTML5, CSS3, JavaScript & jQuery, PHP, SQL

Education

Bachelor of Engineering (**BEng Co-op**) - *University of Guelph* *Sept 2016 – June 2021*
Majoring in **Engineering Systems and Computing**

Work Experience

Student Embedded Systems Design Student - *Evertz Microsystems Ltd.* *Jan 2019 – Aug 2019*

- Implemented several features in a **real-time Closed Captioning server** software using **Python** and **asynchronous Twisted framework**
- Developed new server to handle **Janus Web-RTC** media streams with **redundancy** and **load balancing** features
- Created and modified **shell scripts** to automate creation of environments, migrations to production environment and pre and post installation scripts
- Led **migration** to Ubuntu 18.04 from 16.04 by recompiling libraries, rewriting Python & shell scripts
- Implemented server to server communications using **Twisted Perspective Broker** and **REST API** calls
- Conducted automated **stress testing** and manual **integration** & **system testing**
- Collaborated with supervisor to create product specifications and identify technologies to be used
- Prepared demo **VMWare** system with captioning software suite for customer demo
- Implemented **OKR Agile framework** for working in a small team

Java Learning Assistant - *Sheridan College (Oakville)* *May 2018 – Aug 2018*

- Assisted students in learning programming concepts and troubleshooting in **multiple languages** (primarily **Java, PHP, JavaScript**) though drop-in sessions, appointments and class visits
- Learned to create Java **GUI** applications using **Java FX**
- Organised exam review seminars with prepared exam style questions and answers
- Communicated to students through class portal website and in class visits to ensure students' success in projects
- Created posters for tutoring center and business cards for staff using **Adobe Illustrator**
- Volunteered to work flexibly in both Trafalgar (Oakville) and Davis (Brampton) campus locations when needed

Relevant Projects

Checkpoint - Bluetooth Low Energy (BLE) Indoor Navigation System *Bioinstrumentation Design Capstone Project*

- Created **BLE beacon** based real-time indoor navigation system to help patients navigate large hospitals
- Implemented a web server in **Flask** to enter destination and Python for localization and displaying graphics
- Provided user with graphical feedback though LCD display connected though **SPI** to portable **Raspberry Pi** unit
- Implemented **localization**, data smoothing and **pathfinding** algorithms to navigate user to destination

OpenSaysMe - IOT Garage opener with app & REST API *Github.com/Rr9/openSaysMe | Github.com/Rr9/openSaysMe2*

- Created a Wi-Fi based IOT garage door opener retrofit using **ESP8266 microcontroller** and relays using the **Arduino IDE** in **C++**
- Created and implemented REST API endpoints to access from webpage or Android app

More Projects

Crows Nest – Motion Detection Camera *Github.com/Rr9/CrowsNest*

- Using Python and **OpenCV** to identify key frame differences in video
- Start recording 10 seconds preceding detected motion, overlay time stamp and recording sign on frames
- Change framerates from passive monitoring to active recording for lower memory consumption
- Email notification with timestamp when motion is detected
- Using object-oriented programming in Python to learn OOP syntax and methodologies specific to Python

Flood ESPy – IOT Basement flood detector *Github.com/Rr9/floodESPy*

- Created an IOT flood sensor using a water level sensor that will send warning notification though IFTTT app
- Designed 3D printed case to mount and protect microcontroller from excess moisture

Pomaduino – Arduino Nano based standalone Pomodoro timer *Github.com/Rr9/pomaduino*

- Created standalone Pomodoro timer that runs on an Arduino Nano
- Used 7 segment for displaying output and rotary encoder and click button for input
- Substituted internal clock for RTC as drift is sufficiently small for time under 25 minutes

More about IOT garage door opener

- Developing version 2 with a 3D printed case to reduce impact of vibrations
- Implementing a quadrature encoder to determine position of door
- Updating firmware to request SSID & password on first boot and store to EEPROM

More about BLE Indoor navigation project

- Used touch sensor to turn on display backlight to save battery
- 3D printed display mount to make neater package and to route wires
- Created local network to ensure device displaying webpage and Raspberry Pi were on same network
- Used 9 Bluetooth Low Energy beacons for localization

Handheld device prototype

Tradeshow display setup