Jugal Chitkara

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EDUCATION

Computer Engineering, University of Waterloo, *Bachelor of Applied Science* **2019-2024**
Relevant courses: Data Structures and Algorithms (C++), Concurrent Programming (C), Numerical Methods (MATLAB), Digital Systems (Assembly), Embedded Microprocessor Systems, PCB Design and Prototyping, Advanced Calculus

SKILLS

Languages: HTML, JavaScript, Python, TypeScript, CSS, C++, C, PHP
Frameworks/Databases: NodeJS, Angular, React, Scikit Learn, SQL, MongoDB, Redis, Apache
Tools/Tech: Git, Linux, Vim, Visual Studio Code, Postman, MS Suite, MATLAB, phpMyAdmin

WORK EXPERIENCE

Cachelan, Markham, Ontario
Software Engineer Intern **Apr 2021 – Aug 2021**
- Designed and developed a complete **LAMP Stack** feature for projected outage entry while adhering to client's specifications. Integrated **MailGun API** to automate emails to clients for data entered or deleted on web page.
- Architected an internal tool for labelling images using **Python** and **Tkinter** for GUI.
- Designed and prototyped a machine learning classifier to distinguish whether the site is snow covered. Employed **Scikit Learn** Library and **Scikit Image** for image processing.
- **Automated the site integration to reduce time from a day to less than 30 minutes** by writing Python scripts.

Superheat, Kincardine, Ontario
Web Developer **Sept 2020 – Dec 2020**
- Automated data recovery method from onsite hardware by modifying TCP Socket Communication, NodeJS Servers, and Redis communication resulting in a **decreased project turnover time from over a day to less than an hour**.
- Altered communication streams to transfer temperature and system data from hardware through **NodeJS** webservers and **Redis** to fit specifications requested by the frontend development team.
- Modernized outdated **HTML5 + jQuery** site monitoring and rig control app, remaking it with **Angular 10** framework.

Superheat, Kincardine, Ontario
Web Developer **Jan 2020 – Apr 2020**
- Worked alongside 4 developers in an **Agile** environment to create features for our web application such as writing new views for new data and implementing video upload functionality.
- Maintained current industry standards by refactoring 15-20 modules into components and altered templates to convert and modernize web app from **AngularJS** to **Angular.**
- Updated Loopback **NodeJS** APIs and altered SQL models to securely fetch necessary data.

PROJECTS

PNG Concatenator **C, Threads and Processes Synchronization**
- Developed a multi-process and multi-threaded C program to concatenate PNG files pulled from webservers.
- Program is an implementation of the **Producer-Consumer problem.** Threads in parent process "produce" fragmented image data from webserver and feed to a buffer and multiple threads in child process "consume" data and decode fragment PNG then assemble and encode concatenated PNG output.

WUBU **React, NodeJS, Figma**
- Single page web app created at **Hack the North 2021**. **React** and **Chart.js** frontend and **NodeJS** and **Express** backend.
- WUBU takes your preferences for a property and gives you a report of the location and listings in your location.
- Integrated with various sponsor **APIs** to return information such as walk, bike, transit score, cost of living and local attractions.

PID Controlled Ball on Beam Balance **Arduino/C++**
- Designed and implemented a system that uses PID control principles to balance a ball on a beam at a variable point.
- Used ultrasonic sensor to locate the ball on beam and applied a servo motor to adjust the angle using **Arduino**.
- Control principles can be extended and applied to aircraft/drone stabilization or lane assist in automated vehicles.