

CELENE CHEN

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EXPERIENCE

EMBEDDED SOFTWARE ENGINEER

Evertz Microsystems

📍 Burlington, ON

📅 Aug 2020 – Aug 2022

- Designed and implemented firmware features for **14+** broadcast equipment using **C++** within embedded Linux
- Experienced with debugging in real-time and multi-threaded environments with tools such as **gdb**, and network packet capture tools (TCP/UDP, multicast/unicast) with **tcpdump** and **Wireshark**
- Leveraged **CMake**, shell (**bash**) scripting for dynamic build configurations, third-party libraries and dependencies integration, improved code maintainability for stable continuous integration (**CI**) **Jenkins** pipelines
- Continuous system improvements, including Built-In System Tests, system/stream configuration(ie. video freeze/blanking), I/O mapping, SNMP based alerting, log management systems, web-based dashboard controls, and media streaming capabilities via software/hardware interface APIs
- Managed projects with **Confluence** and **JIRA**, **SVN** and **Git** for version control

SOFTWARE ENGINEER - Perception

WATonomous

📍 Waterloo, ON

📅 Jan 2019 – Mar 2020

- Developed algorithms to tackle the SAE Autodrive competition challenge for the university's self-driving vehicle, working towards level 4 autonomy
- **Camera Calibration:** Performed image rectifications, perspective transform, depth map development using stereo vision and coord transform in **OpenCV**
- **Lane Detection:** Stop line detection and tracking using image processing

MACHINE VISION SYSTEM DESIGNER

Taymer International

📍 Markham, ON

📅 May 2019 – Aug 2019

- Designed and integrated a multi-camera system from scratch on **NVIDIA Jetson TX2** in **C++** and an interactive control interface via **Qt** to support calibrations and real-time performance monitoring in **Linux** environment
- Evaluated algorithms, isolated and removed bottlenecks in both software and hardware performance and testing to achieve optimal design
- Interfaced common communication protocols (**GPIO**, **I2C**, **SPI**, **MIPI**) for camera synchronization and external encoder implementation
- Increased frame rate by **45%** through **multi-threading** design

SOFTWARE DEVELOPER - Sales

ATS Automation Tooling Systems

📍 Cambridge, ON

📅 Sept 2018 – Dec 2018

- Accelerated daily dashboard reports by **40x** through improved algorithms, eliminated redundancy, and implemented code vectorization in **Java**
- Built a **web text scraper** tool to streamline data extraction and preprocessing from existing websites, enabling further data-driven initiatives
- Enhanced data interaction tools in collaboration with financial analysts on company's daily dashboard for forecast and management decisions.

RELIABILITY ENGINEER

IKO Industries

📍 Brampton, ON

📅 Dec 2017 – Apr 2018

- Spearheaded team in the development of two platforms for semi-automation of data migration using **VBA** saving **\$80,000+** and reduced 90% labour
- Improved efficiency of the project by standardizing and combining workflows used by over 11 North American plants
- Assessed criticality ranking of **Failure Modes and Root Causes Analysis** to develop Predictive, Preventive, Condition Based Maintenance Strategies

Other Involvements:

- Engineering Orientation Leader, aUToronto, Hart House String Ensemble, Hackathon Mentor

EDUCATION

Master of Engineering (MEng) in Computer Engineering

(Emphasis in Data Analytics & Machine Learning)

UNIVERSITY OF TORONTO, GPA: 3.8+/4.0

📅 Sep 2022 - Apr 2024

- Cloud-Based Data Analytics
- Digital Image Processing
- Perception for Robotics
- Parallel Programming

Bachelor of Applied Science (BASc) in Mechatronics Engineering

UNIVERSITY OF WATERLOO

📅 Sep 2015 - Jun 2020

- Data Structures and Algorithms
- Database Management Systems
- Computer Structures & Real-Time Systems

PROJECTS

IGNIS: Augmented Flashover Prediction

- A wearable device designed for augmented firefighter safety utilizes visible and infrared cameras, computer vision, and machine learning for image processing and segmentation to predict and identify flashovers

OdysseySteps: Travel Diary

- Scalable web app to pinpoint travel memories with geolocation, photos and stories by uploading photos to interactive map in **AWS** (**EC2**, **RDS**, **S3**), **Flask**, **MongoDB**, **Javascript**

Multi-Terrain Search&Rescue Robot

- An autonomous multi terrain robot interfaced with **IR**, **IMU**, **TFmini LiDAR** and **optical encoder sensors** to search for 'survivors' and put out fire

TECHNICAL SKILLS

SOFTWARE

- | | | |
|----------|--------------|--------|
| • C/C++ | • HTML/CSS | • Bash |
| • Python | • Javascript | • SQL |

LIBRARIES

- | | | |
|---------|----------|--------------|
| • Numpy | • Pandas | • Matplotlib |
|---------|----------|--------------|

FRAMEWORKS

- | | | |
|-----------|----------------|----------|
| • Flask | • Tensorflow | • Hadoop |
| • Pytorch | • Scikit-learn | • OpenCV |

OTHERS

- | | | |
|-------------|-------|-----------|
| • ROS2 | • AWS | • Postman |
| • Wireshark | • GDB | • Linux |