# Guillaume **Lagrange**

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## **Edu**cation

### Professional M.Sc. in Machine Learning
09.2019 – 05.2021

MILA – QUEBEC AI INSTITUTE, MONTRÉAL

### Bachelors in Automation Engineering
09.2015 – 05.2019

ÉCOLE DE TECHNOLOGIE SUPÉRIEURE, MONTRÉAL

### College Diploma in Computerized Systems Technology
09.2012 – 06.2015

COLLÈGE GÉRALD-GODIN, SAINTE-GENEVIÈVE

🏆 Award of Excellence from the Department of Studies for my collegiate end of studies project, a remote monitoring and data logging system.

## **Ski**lls

| | |
|---|---|
| **Tools** | PyTorch/Libtorch, Tensorflow, Numpy, OpenCV, Git, LaTeX |
| **Programming** | Python, C/C++, SQL, MATLAB |
| **Database Management** | MySQL, SQLite |
| **Operating Systems** | Linux, Windows |
| **Electronics** | Digital Electronics, Microcontrollers, Programmable Logic Controllers, Prototyping, Communication Protocols |

## **Exp**erience

### Machine Learning Developer
01.2021 – present

TELEDYNE DALSA, SAINT-LAURENT

- Maintain and develop model deployment pipeline including C++ runtime SDK
- Contribute and supervise R&D initiative for online continual learning in image classification
- Collaborate in back-end development for model serving of various vision architectures
- Assist with internal projects and tasks that could leverage deep learning

### Applied Research Scientist - Mitacs
05.2020 – 12.2020

TELEDYNE DALSA, SAINT-LAURENT

- Conduct a thorough literature review of semi-supervised object detection (SSOD) and related works
- Reproduce state-of-the-art methods and experiment on machine vision dataset
- Expand, adapt and improve a self-training framework for SSOD with real-time inference

### Software Developer - Artificial Intelligence                01.2019 – 05.2020
TELEDYNE DALSA, SAINT-LAURENT

- Participate in the development of a new software platform to deploy deep learning models in production by facilitating the common deep learning workflows for computer vision applications
- Integrate deep neural network architectures to existing back-end for different computer vision tasks
- Collaborate in back-end development to serve model training, testing and inference
- Explore and benchmark deep learning model inference on different embedded devices

### Software Engineer Intern - Artificial Intelligence          09.2018 – 01.2019
TELEDYNE DALSA, SAINT-LAURENT

- Develop a real-time object detection system for a trade show demo application
- Integrate an object detection deep neural network architecture to existing back-end for model serving
- Develop an automated tool to allow quick image dataset construction from the web

### Software Engineer Intern                                      05.2017 – 09.2017
HEWLETT-PACKARD ENTERPRISE, SAINT-LAURENT

- Refactor the tool for generating files with unique numbering of a product's high-level system logs
- Optimize the build system and eliminate circular dependencies between modules
- Integrate a customized automation tool (bot) into the team's collaboration center

## Projects

### Low-Resource Neural Machine Translation                      05.2020

- Train a small Transformer for English to French translation with subword segmentation, target-side capitalization encoding and back-translation data augmentation
- Evaluate the impact of capitalization in the target language, punctuation in the source language, augmented corpora size and segmentation of sequences into subword units with a smaller vocabulary
- Present quantitative and qualitative results analysis of the best performing model based on BLEU score

### Solar Irradiance Nowcasting from Satellite Imagery           03.2020

- Train a predictive 3D ConvNet model for Global Horizontal Irradiance (GHI) nowcasting from satellite imagery sequences with target values provided by Surface Radiation (SURFRAD) stations on the ground
- Implement different missing value imputation methods and efficient data loading and image pre-processing for large-scale satellite imagery
- Present quantitative result analysis with varying architecture, past image sequence lengths and predictive target based on clear-sky model offset

### Robotic Vision Application: Deep Learning Based Pick and Place  05.2019

- Train and evaluate a ConvNet-based object detection model for the target application
- Program real-time capture from a high-performance industrial camera using the GigE-V interface
- Infer detections from captured image data and map positions to the workspace coordinate system
- Control a robotic arm in a reactive manner based on the detected objects' positions
- Develop an application to interface the different tasks concurrently, including a GUI to interact with the devices and display the camera's video feed with the detected objects