

Wylliam Cantin Charawi, CEP

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Experience

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| Computer Vision Research Developer , Zebra Technologies – Montreal, QC | Oct. 2025 – Present |
| • Researching MDE and 3D reconstruction for industrial applications using deep learning and computer vision. | |
| Vision & Graphics Researcher , CVG Kawasaki Lab, Kyushu University – Fukuoka, JP | May 2024 – Sept. 2025 |
| • Published DCCVT to International Conference on 3D Vision (3DV). | |
| Computer Vision Research Developer , Zebra Technologies – Montreal, QC | May 2023 – Aug. 2023 |
| • Developed a Python pipeline tool to augment barcode datasets using C++ and the Matrox Imaging Library to create test files and run benchmarks on different AI models and algorithms, reducing costs by 1500%. | |
| • Captured real-world hazmat label data, built and augmented a dataset, and trained an RTMDet/YOLO model to accurately recognize labels in video feeds with 98.2% accuracy. | |
| Analyst Programmer , Loto-Québec (Technologies Nter) – Montreal, QC | Jan. 2022 – Apr. 2022 |
| • Developed and improved the performance of several Vue.js components, resulting in a fluid and responsive UI. | |
| • Proposed a Bootstrap and CSS typography solution, resulting in a responsive and dynamic UX. | |
| • Implemented improvements to Agile practices within the team, leading to the adoption of story points. | |
| Junior Developer , Vokeso (Gold Microsoft Partner) – Montreal, QC | May 2021 – Aug. 2021 |
| • Developed Dynamics 365 extensions (C/AL) and a full-stack web application (React.js , PHP , MSSQL), while managing containerized database infrastructure using Docker and Azure . | |

Leadership

- SWE Representative Administrator**, Association Étudiante ÉTS – Montreal, Qc Sept. 2021 – May 2024

 - Sat on AÉÉTS board of directors, managing a 1M\$ budget and organized activities for SWE students

Technology Application Technician, ÉTS – Montreal, Qc Sept. 2021 – May 2024

 - Tutored students for their mechanical, electrical and optical physics lab activities (ING150, PHY332, PHY335)

Publications & Projects

- DCCVT: Differentiable Clipped Centroidal Voronoi Tessellation** | Pytorch github.com/tiwylli/DCCVT

 - Novel framework for paving Voronoi diagrams with differentiable clipped centroids to extract high-quality meshes from SDF using PyTorch, outperforming SotA marching tetrahedra and Voronoi-based methods.

Voronoiify | Python, CUDA C++, Rust github.com/tiwylli/voronoiify

 - Engineered multiple high-performance implementations of a Voronoi image generator, targeting CPU, multi-core CPU, and GPU architectures to analyze performance trade-offs.
 - Developed a native CUDA C++ solution using the Jump Flooding Algorithm (JFA) for labeling and a custom parallel reduction kernel for color averaging, eliminating host-device transfer bottlenecks.

- Rendering Engine – Monte Carlo Path Tracer** | *Rust, Python, Blender* github.com/tiwylli/PBR-Engine

 - Implemented a physically based Monte Carlo path tracer featuring Multiple Importance Sampling (MIS) and Next-Event Estimation (NEE), extending light transport support to homogeneous participating media via Henyey–Greenstein phase functions.
 - Engineered a hybrid intersection pipeline combining standard mesh traversal with ray-marched Signed Distance Fields accelerated by Bounding Volume Hierarchies, integrated with Intel OIDN for denoising.

Education

- École de Technologie Supérieure (ÉTS) – PhD in Computer Vision & Graphics December 2027
École de Technologie Supérieure (ÉTS) – B.Eng. in Software Engineering August 2024