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| Curriculum vitae | Gabriel Descôteaux(514) 404-5254Montreal, Quebec, Canadagabriel.descoteaux@polymtl.caPortfolio : https://gadese.github.io/ |
| **Overview** | **Skills** |
| * Experience: **computer vision** (CV), **robotics**, deep learning, natural language processing
* Fluent in French and English
* Demonstrated excellent organizational, communication, teamwork and project management skills
* Working in a **Linux** environment **cloud-based** GPUs/storage
* Proficiency in **Python**, C++, as well as experience with JAVA & MATLAB
* Eager to learn and face new challenges
 | **Deep learning / Machine learning*** **Tensorflow**, **Keras**, scikit-learn
* **Convolutional neural networks** (CNN), transformer models (BERT), classical machine learning (K-means, SVM, etc.)
* OpenCV, Pandas, Numpy
 | **Programming*** Python, C++, Java, Matlab
* Version control (**Git**)
* Cloud-based GPU systems, remote debugging, Linux environment
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| **Others*** MS Office, Cooking mexican cuisine, LaTeX
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| **Education** |
| **M.Sc in Mechanical Engineering – Robotics and Mechatronics systems***Research Group in Design, Machine Learning and Optimization for Mechatronic Systems, Polytechnique Montréal**Thesis: Autonomous feeding-assistance system for people with upper body disabilities (*[***see demo here***](file:///O%3A%5CDocuments%5CGitHubRepos%5Cgadese.github.io%5Cprojet-maitrise%5Cmaitrise.html)*)** Implement detection and localization in 3D of food in an image (Python & Tensorflow)
* Code pathplanning of a 6DoF robot arm (C++ & Python)
 | **2018-2020****GPA: 4.00/4.00** |
| **B.Sc in Electrical Engineering***Polytechnique Montréal**Graduated with a focus on* ***AI, Computer Vision****, Robotics and Controls* | **2014-2018****GPA: 4.00/4.00** |
| **Publications** |
| * Descôteaux G., Coulombe, C., Chouinard U., Achiche S., “Towards an Efficient Robust Design Methodology for Complex Mechatronic Systems”, IDETC-CIE, 2021. [Submitted]
* Coulombe, C., **Descôteaux, G.**, Barron, O., Gamache, J.F., Saussie, D., Achiche, S.,“Task Taxonomy for Autonomous Unmanned Aerial Manipulator: A Review”, IDETC-CIE, 2020.
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| **Engineering Experience** |
| **Research Scientist – Natural Language Processing****2020-Present***Nuance Communications* | * Optimize natural language processing model (BERT) to meet client requirements using **Tensorflow**
* Test and compare new model architectures to baselines in order to evaluate improvements
* Develop techniques to **improve NLP model performance on very small training sets**: data augmentation, few-shot learning, post-training hand-designed techniques
* Contribute to adding new features to company software and maintaining codebase for company-wide tools using JAVA
* Work with cloud-based GPU platforms using remote debugging and Git
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| **Research Development Intern – Computer Vision****2020***Nuance Communications* | * Work on **a proof-of-concept of a CV system** to help doctors with note-taking during consultations
* Implement state-of-the-art computer vision algorithms for pose estimation and action detection in Python and Tensorflow/Keras following a literature review
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| **Software Development Intern****2018***Analogic Canada* | * Develop defect detection algorithms for X-ray images in order to automate the X-ray detector vetting process (Python)
* Converted existing C++ algorithms in Python
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| **Research Intern in Robotics****2016-2017***Research Group in Design, Machine Learning and Optimization for Mechatronic Systems, Polytechnique Montreal* | * Develop a control method for a 6DoF robot arm **using facial recognition** (C++)

[[demo link here](https://gadese.github.io/robot-facial-recog/robot-facial-recog.html)]* Test optimisation algorithms for the physical parameters of a drone in order to reduce energy consumption (Genetic Algorithm, Particle Swarm, Latin Hypercube Sampling, etc.)
* Contribute to the redaction of a publication on robust design methodology
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| **Research Intern in Biomedical Imaging****2015***Laboratory of Optical Diagnoses and Imaging, Polyechnique Montreal* | * Design a variable length reference arm for Optical Coherence Tomography (OCT) in order to reduce noise in a medical image without using software correction
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| **Personal Projects / Student Groups** |
| **Personal Computer vision projects*** Using a database of speed limit signs, learn to detect them on new images [In progress, [github link here](https://github.com/gadese/speedsigns)]
* Various simple Kaggle competitions: Regression on House Prices, Digit recognizer, CIFAR-10 classifier
* Implement various algorithms for computer vision (**ResNet, YOLO, Faster RCNN**) in Keras
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| **Other projects*** Rubik’s cube self-solving robot
* Glove to measure forces within finger tendons for rock-climbing training (Final year project for my B.Sc.)
* 2-wheels self-balancing robot [[link here](https://gadese.github.io/segway/segway.html)]
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| **Extracurricular courses*** Coursera Self-Driving Cars specialization
* Coursera Deep Learning Specialization
* Udacity’s Artificial Intelligence for Robotics course
* Coursera’s Natural Language Processing Specialization
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| **PolyProject (Engineering student club)***2014-2018** Technical group aiming to complete innovative projects. Projects completed: Fiber optics sensory glove, human-like robot hand
* Treasurer (2016-2017) and Public Relations Manager (2015-2016)
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| **Honors & Awards** |
| 201920182015, 2016, 20172015-2019 | *FRQNT research grant for M.Sc. students**NSERC research grant for M.Sc. students**NSERC Summer research grant for undergraduate research**Others by Polytechnique Montreal (for community involvement & academic performance): JA DeSève award, CMC Électronique award, Vedel award, Hatch Lt. award* |