

# Simon GUIROY

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LANGUAGES: French (native), English (bilingual), Spanish (professional fluency), Arabic (intermediate)

I am currently a second year masters student at MILA, supervised by Prof. Chris Pal. My research interests include Meta-Learning, computer vision, optimization and generalization in Deep Learning, hierarchical representation learning, AI Against Climate Change.

## EDUCATION

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### Master's Student in Machine Learning (2nd year)

Montreal Institute for Learning Algorithms (MILA), University of Montreal

**Bachelor of Electrical Engineering**, Polytechnique Montreal, 2016

**Engineering Physics (two years, Bachelor's degree)**, Polytechnique Montreal, 2011 - 2013

## PUBLICATIONS

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- On the properties of the objective landscapes in gradient-based meta-learning. *First author. (Ongoing, to be submitted to ICML 2019)*
- Characterization of generalization through the dimensionality measure of attractors. *Second author. (Ongoing)*
- On the reproducibility of gradient-based Meta-Reinforcement Learning baselines. Reproducibility in ML Workshop, ICML 2018. Tristan Deleu, Simon Guiroy, Seyedarian Hosseini
- Application of the Kaldi toolkit for continuous speech recognition using Hidden-Markov Models and Deep Neural Networks". Simon Guiroy, Ricardo de Cordoba, and Amelia Villegas. Proc. of Iberspeech 2016, pp. 187-196. November 2016. Lisbon, Portugal

## WORK EXPERIENCE

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| 2017 | <b>Software Developer</b> at CHAAC TECHNOLOGIES, <i>Professional</i><br>Development of an Android application, involving geographic information systems, SQL database design and management, Java and Xml programming. Participation in decisions regarding the software architecture, producing documentation for an R&D project involving photogrammetry, drones and virtual reality. Also involved Agile methodology, MVC design pattern, web programming (Javascript, PHP), Google Maps API, data management. |
| 2015 | <b>Embedded Software Developer</b> at ORTOPED, <i>Intern</i><br>Working on the R&D for a computer vision based, biometric hand measurement system, on the aspects of software development in an embedded Linux environment, using languages such as C++ (OpenCV), Python and Bash, as well as electronic circuit design, microcontroller programming, data acquisition algorithms and graphical user interface (Qt5).   |

2014	<b>Embedded Software Tester</b> at CS COMMUNICATION ET SYSTÈMES CANADA, <i>Intern</i> Performing integration testing on critical embedded softwares for Pratt & Whitney aircraft engines. Performing dynamic coverage analysis, verifying software compliance with norms and standards (DO-178B) for certification. Designing tests, reviewing peer's tests.
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## TEACHING EXPERIENCE

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**Teacher of Python programming**, Accra (Ghana), summer 2018. Part of the MISE Program, in collaboration with ElementAI and Mila. Condensed teaching of Python programming to highly skilled high school students in Ghana, to prepare their participation in machine learning research projects. Tasks: teaching to my own class, elaborated, with a colleague, general structure of the course, lecture notes, exercises, homeworks, final project.

## SKILLS

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**Courses:** (Mila): Deep Learning, Fundamentals of Machine Learning, Probabilistic Graphical Models, Reinforcement Learning. (Polytechnic Madrid): Machine Learning and Neural Networks, Computer Vision

**Computer skills:** PyTorch, Python, C, C++, Matlab, VHDL (FPGA), Java, Android development, Linux, OpenCV.

## PROJECTS

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*Characterizing Violent Human Actions in Video through Deep Learning (Ongoing)*

*Reproducing InfoGAN: Interpretable Representation Learning by Information Maximizing Generative Adversarial Nets*

*Embedded system of virtual reality and information extraction about surrounding environment through ocular commands:*

Designing and building an optical head-mounted display and image acquisition system. Embedded Linux application, using OpenCv (C++), Python and Bash. Designing a camera system and computer vision program to control a cursor with eye motion (eye tracking), head mounted frontal camera for image acquisition (seen by user), optical and electronic system for augmented reality, displaying information extracted from acquired and processed images.

## EXTRACURRICULAR ACTIVITIES

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2015 - 2016	Student exchange at the Technical University of Madrid, Spain. Two semesters
2013 - 2014	Élikos technical society, Polytechnique Montreal. Goal : Designing an autonomous quadcopter drone Tasks : controller tuning (PID), testbench
2011 - 2013	Polycultures student association, Vice-President, public relations officer, Polytechnique Montreal, Goal: To promote cultural diversity at the university, organize cultural events.