


# SACHA MORIN

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 [github.com/sachaMorin](https://github.com/sachaMorin)

## Education

### Research M.Sc.

**in Machine Learning** - Since 2021

RAFALES, Professor Guy Wolf

DIRO, Université de Montréal

GPA: 4.30 / 4.30

16 credits (as of Summer 2022)

### Bachelor of Mathematics and Computer Science - 2021

DIRO, Université de Montréal

GPA: 4.15 / 4.30

91 credits

### École du Barreau du Québec - 2017

Barreau du Québec

### Bachelor of Law (LLB) - 2017

Université de Sherbrooke

GPA: 3.68 / 4.30

93 credits

### Minor in Economics - 2014

Université de Montréal

GPA: 3.89 / 4.30

33 credits

## Collaborations

I have ongoing collaborations with researchers from the following groups:

### Kevin Moon Lab

Utah State University

### Robotics and Embodied AI Lab

Université de Montréal

### Laboratoire sur les Changements Sociaux et l'Identité

Université de Montréal

### Mila COVID-19 Taskforce

Université de Montréal, CRCHUM

## Research Interests

My research interests include deep learning, manifold learning, self-supervised learning and robotics. I am also interested in biological applications.

## Journal Publications

[1] Patient health records and whole viral genomes from an early SARS-CoV-2 outbreak in a Quebec hospital reveal features associated with favorable outcomes. Paré, Bastien et al. *PLOS One*, December 2021.

## Conference Proceedings

[2] Monocular Robot Navigation with Self-Supervised Pretrained Vision Transformers. Saavedra, Miguel\*; Morin, Sacha\*; Paull, Liam. *Conference on Robots and Vision*, May 2022.

[3] Extendable and invertible manifold learning with geometry regularized autoencoders. Duque, Andres F\*; Morin, Sacha\*; Wolf, Guy; Moon, Kevin. *IEEE Machine Learning on Big Data*, December 2020.

## Workshops

[4] Extendable and invertible manifold learning with geometry regularized autoencoders. Morin, Sacha\*; Duque, Andres F\*; Wolf, Guy; Moon, Kevin. In *Montreal AI Symposium (MAIS)*, Montreal, 2020.

[5] Extendable and invertible manifold learning with geometry regularized autoencoders. Duque, Andres F\*; Morin, Sacha\*; Wolf, Guy; Moon, Kevin. In *Conference on the Mathematical Theory of Deep Neural Networks (DeepMath)*, Virtual Conference, 2020.

[6] Extendable and invertible manifold learning with geometry regularized autoencoders. Duque, Andres F\*; Morin, Sacha\*; Wolf, Guy; Moon, Kevin. In *Differential Geometry meets Deep Learning (DiffGeo4DL)*, Virtual Conference, 2020.

## Manuscripts in Preparation

Unbiased dimensionality reduction reveals multiple simultaneous dysregulations associated with poor antibody responses or fatal outcome in acute COVID-19. Brunet-Ratnasingham, Elsa; Morin, Sacha et al.

Data-driven approaches for genetic characterization of SARS-CoV-2 lineages. Mostefai, Fatima et al.

Extendable and invertible manifold learning with geometry regularized autoencoders. Duque, Andres F\*; Morin, Sacha\*; Wolf, Guy; Moon, Kevin. Journal version. (Under review)

\* indicates equal contributions.

## Others

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### **Student Intersectoral**

**Committee** – Term to begin in 2022

IVADO

Develop and strengthen social, professional and academic ties within the IVADO student community

### **Winner of the Matthieu-Bernard Competition** – 2016

SQDI

Paper on nuclear disarmament and international public law

### **Pro Bono Canada** – 2014-2015

Université de Sherbrooke

Draft training material for directors of non-profits

### **Finalist** – 2014

Droit de cité, CIBL 101.5

Radio debate tournament on topics such as autonomous weapons, gender parity for ministerial cabinets and surrogacy

### **Debate club** – 2013-2017

Université de Montréal

Université de Sherbrooke

## Languages

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French

English

## Awards

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### **IVADO M.Sc. Scholarship** – 2021

Institut de valorisation des données

### **FRQNT B1X Scholarship** – 2021

Fonds de recherche du Québec – Nature et technologies

### **NSERC M.Sc. Scholarship** – 2021 (Declined)

Natural Sciences and Engineering Research Council of Canada

### **ISM Undergraduate Research Scholarship** – 2021

Institut des sciences mathématiques

### **IVADO Undergraduate Research Scholarship** – 2020

Institut de valorisation des données

### **NSERC Award** – 2019

Natural Sciences and Engineering Research Council of Canada

### **Scholarship for Academic Excellence** – 2019

Bourse d'excellence des diplômés et des professeurs – DIRO

Université de Montréal

### **Dean's List** – 2015, 2016 and 2017

Faculty of Law

Université de Sherbrooke

## Work Experience

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### **Université de Montréal / Mila, Montreal**

Research Intern – Since 05/2020

Professor Guy Wolf, DMS

- See Conference Proceedings and Workshops (above)

### **LJT Lawyers LLP, Montreal**

Lawyer (part-time) – 01/2020 to 04/2020

Articling Student – 07/2019 to 01/2020

Student-at-law – 05/2018 to 08/2018

- Mergers and acquisitions of software companies

### **Université de Montréal, Montreal**

Research Intern - 09/2018 to 04/2019

Professor Marc Feeley, DIRO

- Develop Gambit Forensics, an analytics tool to benchmark various compilers of the Scheme programming language