# VICTOR SCHMIDT

PhD Candidate
Advisor: Yoshua Bengio

## EDUCATION

### > Mila - U. de Montréal, Montréal
Jan 2019 - **Now**

**PhD in Computer Science and Operations Research**
Advised by Prof. Yoshua Bengio. Working on applications of Deep Learning to fight climate change. First project in computer vision with GANs, domain adaptation and multi-task learning to create personalized visualizations of climate related extreme events. Now working on graph neural networks and generative modeling (GFlowNets) applied to materials discovery.

### > University College London, London
2016 - 2017

**MSc. Machine Learning** (with Distinction): Supervised learning, Graphical models, RL, NLP, Computer Vision.
**NLP Research Internship** with Prof. Riedel (4 months, UCL Machine Reading Group): Deep RL to answer questions using Wikipedia.

### > Ecole polytechnique, Paris
2012 - 2016

Engineering degree (eq. MSc) **Entrepreneurship and Data Science** : Quantum Physics, Computer Science, Operations Research, Entrepreneurship, Data Science

### > Lycee Janson de Sailly, Paris
2010 - 2012

Selective and intensive program preparing for the French engineering schools: Advanced Maths, Physics and Chemistry

## SKILLS

### Computer Science

**Python** (incl. Flask)
JavaScript (incl. React)
HTML, CSS
**Deep Learning:** PyTorch, Tensorflow, Keras

### Languages

French : mother tongue
English : fluent (114/120 TOEFL)
Spanish : average
Classic Arabic : beginner

## INFO


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## EXPERIENCE

### > Ministry for the Economy, Paris
*NLP Data Scientist* Feb 2018 - Dec 2018

- **Document classification** and sentence highlighting
- **Validation web app** to mesure noise in the labels and improve understanding of the models.
- **Translation** (Fr-En) proof of concept for fine-tuned NMT

### > Rythm, Inc. Paris
*Data Science Engineer* Sep 2015 - Feb 2016

- **Deep learning infrastructure** using Keras & Lasagne
- Signal quality prediction based on two seconds of electro-encephalogram signal with LSTM networks
- **Backend** server to store and compare predictors

### > Lycee Janson de Sailly, Paris
*Maths Teacher Assistant* Sep 2013 - Jun 2014

### > Gemalto, Singapore
*Software Engineer Intern* Jul 2013 - Aug 2013

- Development of a mobile web app

## OPEN SOURCE

**metada.org** website and browser extension showing the hierarchy of ownerships in the French media.

**ML-CO2** online carbon emissions calculator for Machine Learning.

**PaperMemory** browser extension to automatically record papers, fetch code and match preprints to publications.

**Deep Learning tutorials** with Keras and Lasagne.

**CodeCarbon** a Python package to track and estimate the energy consumption of AI models.

**Minydra** Python command-line parser.

**ClimateGAN** code for the ICLR 2022 paper (Huggingface space)

**thisclimatedoesnotexist.com** an interactive website showcasing ClimateGAN: what if climate change came to your doorstep?

**StackOverflow** reputation: 13.4k

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# RESEARCH

### > Visualizing the Consequences of Climate Change

***V. Schmidt****, *A. Luccioni**, *S. K. Mukkavilli, N. Balasooriya, K. Sankaran, J. Chayes, and Y. Bengio.* AI for Social Good Workshop, ICLR 2019 (oral). Invited talk at ITU's AI for Good Global Summit 2019.

### > Artificial intelligence based cloud distributor: probing clouds with GANs

*T. Yuan, H. Song, D. Hall,* ***V. Schmidt****, K. Sankaran, and Y. Bengio.* International Workshop on Climate Informatics, 2019.

### > Quantifying the Carbon Emissions of Machine Learning

*A. Lacoste*, A. Luccioni*,* ***V. Schmidt****, and T. Dandres.* Climate Change AI Workshop, NeurIPS 2019. Online calculator: https://mlco2.github.io/impact.

### > Using Simulated Data to Generate Images of Climate Change

*G. Cosne*, A. Juraver*, M. Teng*,* ***V. Schmidt****, V. Vardanyan, A. Luccioni, Y. Bengio.* Machine Learning in Real Life Workshop, ICLR 2020 (oral).

### > Modeling Cloud Reflectance Fields Using Conditional Generative Adversarial Networks

***V. Schmidt****, *M. Alghali*, K. Sankaran, Y. Bengio and T. Yuan.* Climage Change AI Workshop, ICLR 2020 (spotlight).

### > Predicting infectiousness for proactive contact tracing

*Y. Bengio*, P.Gupta*, T. Maharaj*, N. Rahaman*, M. Weiss*, T. Deleu, E. B. Müller, M. Qu,* ***V. Schmidt****, P.-L. St-Charles, H. Alsdurf, O. Bilaniuk, D. L. Buckeridge, G. Marceau-Caron, P. L. Carrier, J. Ghosn, S. Ortiz-Gagne, C. J. Pal, I. Rish, B. Schölkopf, A. Sharma, J. Tang, A. Williams.* **ICLR 2021** (spotlight).

### > ClimateGAN: Raising Climate Change Awareness by Generating Images of Floods

***V. Schmidt****, *A. Luccioni*, M. Teng, T. Zhang, A. Reynaud, S. Raghupathi, G. Cosne, A. Juraver, V. Vardanyan, A. Hernandez-Garcia, Y. Bengio.* **ICLR 2022**. Website: thisclimatedoesnotexist.com

### > Surface micropatterning for the formation of an in vitro functional endothelial model for cell-based biosensors

*Z. Khadir,* ***V. Schmidt****, K. Chabot, J.-F. Bryche, U. Froehlich, J. Moreau, M. Canva, P. Charette, M. Grandbois.* **Biosensors and Bioelectronics**.

### > PhAST: Physics-Aware, Scalable, and Task-specific GNNs for accelerated catalyst design

*A. Duval*,* ***V. Schmidt****, A. Hernández-García, S. Miret, Y. Bengio, D. Rolnick.* **JMLR, 2023** (accepted, to be published)

### > FAENet: Frame Averaging Equivariant GNN for Materials modeling

*A. Duval*,* ***V. Schmidt****, A. Hernández-García, S. Miret, F. Malliaros, Y. Bengio, D. Rolnick.* **ICML 2023**.

# OTHER

### > Reviewer

- AI for Social Good Workshop, NeurIPS 2019
- WiML, NeurIPS 2019
- AI for Geosciences Workshop, ICLR 2020
- Climate Change AI Workshop, ICLR 2020
- ICLR 2022 Blog Track

### > Supervisions

- 11 interns over 3 years on the ClimateGAN project
- 4 Humanitarian AI interns individual co-supervision
- 2 MSc. Pro. internship advisor
- 2 MSc. direct supervision
- TA and projects advisor for IFT 3710/6759 Advanced Projects in ML (x2)
- Currently co-supervising 2 interns (MSc.).