

Tom Marty

 3rdcore.github.io

 tom.marty@mila.quebec

 Google Scholar

  

EDUCATION

Ph.D. in Machine Learning

Mila, Université de Montréal - GPA 4.00

Jan. 2024 –

Montréal, Canada

M.Sc. in Machine Learning

Polytechnique Montréal - GPA 3.91

Sep. 2021 – Jun. 2023

Montréal, Canada

B.Sc. in Computer Science, minor in Applied Mathematics

X 2018, Ecole Polytechnique - GPA 3.84

Sep. 2018 – Jun. 2021

Palaiseau, France

Advanced Preparatory Class for Competitive Exams

Lycée Jean-Baptiste Say - GPA 4.00 - Top 0.1% national

Sep. 2016 – Jun. 2018

Paris, France

RESEARCH INTEREST

- **Broad interest** : Deep Learning, Generative modeling and Operational Research
- **Methodological interest** : Flow-based model, Causality, Generalization, Information Theory
- **Applications** : ML for biology, Robust Machine Learning, Open-Ended Decision Making

INDUSTRY AND ACADEMIC EXPERIENCE

Visiting Researcher

ServiceNow Research

Apr. 2023 – Sept. 2023

Montréal, Canada

- Developed WorkArena (ICML2024): an open-source Benchmark and Gym environment for evaluating Agent at solving common-knowledge tasks on a Web Browser

Research Supervisor

Corail Research Group

Jan. 2022 – Sept. 2022

Montréal, Canada

- Supervised five interns on the development of the open-source project SeaPearl
- Teaching Assistant for the course INF8215 given by Quentin Cappart in Fall 21 and Fall 22

Research Engineer Intern

Corail Research Group

Jan. 2021 – Sept. 2021

Montréal, Canada

- Developed *SeaPearl* : an open-source RL-driven generic Constraint Programming solver
- Used Deep Q-networks and Heterogeneous GNNs to approximate optimal decision process

Software Engineer Intern

Dronisos, drone light show company

Jun. 2020 – Sept. 2020

Bordeaux, France

- Developed *Harmony*, a Physics based meta-heuristic that secures massive drone swarms
- *Harmony* - currently in use - reduced the allocated securing time from 2 weeks (handmade) to 2 seconds
- Achieved automatic securing on the company first 1000 drones choreography (+500k\$ show)

CONFERENCE AND JOURNAL PUBLICATIONS

In-Context Learning and Occam's Razor

Eric Elmoznino*, Tom Marty*, Tejas Kasetty, Leo Gagnon, Sarthak Mittal, Mahan Fathi, Dhanya Sridhar, Guillaume Lajoie

International Conference on Machine Learning (ICML 2025)

 Code  PDF

Next-Token Prediction Should be Ambiguity-Sensitive: A Meta-Learning Perspective

Leo Gagnon, Eric Elmoznino, Sarthak Mittal, Tom Marty, Tejas Kasetty, Dhanya Sridhar, Guillaume Lajoie

International Conference on Machine Learning (FoMo@ICML 2025)

 PDF

The BrowserGym Ecosystem for Web Agent Research

Thibault Le Sellier De Chezelles, Maxime Gasse, Alexandre Drouin, Massimo Caccia, Léo Boisvert, Megh Thakkar, **Tom Marty**, Rim Assouel, Sahar Omidi Shayegan, Lawrence Keunho Jang, Xing Han Lù, Ori Yoran, Dehan Kong, Frank F. Xu, Siva Reddy, Quentin Cappart, Graham Neubig, Ruslan Salakhutdinov, Nicolas Chapados, Alexandre Lacoste

Transactions on Machine Learning Research (TMLR 2025) .

 Code  PDF

Learning and Fine-Tuning a Generic Value-Selection Heuristic Inside a Constraint Programming Solver

Tom Marty*, Léo Bois-Vert*, Tristan François, Pierre Tessier, Louis Gautier, Léo-Boisvert, Louis-Martin Rousseau, Quentin Cappart, Constraint Journal 2024.

 Code  PDF

WorkArena: How Capable Are Web Agents at Solving Common Knowledge Work Tasks?

Alexandre Drouin, Maxime Gasse, Massimo Caccia, Issam H Laradji, Manuel Del Verne, **Tom Marty**, Léo Boisvert, Megh Thakkar, Quentin Cappart, David Vazquez, Nicolas Chapados, Alexandre Lacoste International Conference on Machine Learning (ICML 2024) .

 Project  Code  PDF

The Unsolved Challenges of LLMs as Generalist Web Agents: A Case Study

Rim Assouel*, **Tom Marty***, Massimo Caccia, Issam H. Laradji, Alexandre Drouin, Sai Rajeswar, Hector Palacios, Quentin Cappart, David Vazquez, Nicolas Chapados, Maxime Gasse, Alexandre Lacoste Foundation Models for Decision Making Workshop (FMDM@NeurIPS 2023) .

 Code  PDF

Learning a Generic Value-Selection Heuristic Inside a Constraint Programming Solver

Tom Marty*, Tristan François, Pierre Tessier, Louis-Martin Rousseau, Quentin Cappart Distinguished paper, Constraint Programming (CP 2023).

 Code  PDF

OTHER PROJECTS

In-Context Invariant Learning

Dec. 2024 –

- Work in progress...

BrowserGym : an Open-Source Benchmark for evaluating Web Agents | Python

Apr. 2023 – Mar. 2024

- Paper accepted at ICML 2024 Vienna, presented at NVIDIA GTC 2024

SeaPearl : an Open-Source RL-driven Constraint-Programming Solver | Julia

Fev. 2021 – Jul. 2023

- Paper accepted at CP2023, Toronto

Adversarial Attacks on Sentiment Classification models | Python, HuggingFace

Fev. 2022 – May. 2022

- Adversarial fine-tunning on large NLP models : Eleuther AI GPT 125M/1.3B/2.7B/6B parameters
- Evidence of a correlation between scaling and robustness against increasingly subtle Adversarial Attacks

Diffusion Geodesic distance for non-linear dimensionality reduction | Python

Oct. 2021 – Jan. 2022

- Approximated the geodesic distance using a diffusion process over the manifold
- Proposed a new data visualization algorithm based on Multi-Dimensional Scaling and Diffusion Geodesic

Autonomous Drone Swarm Deployment - DGA contest | Python, PyTorch

Nov. 2020 – Mar. 2021

- Multi-agent Q-Learning method for deployment optimization
- Density-Based Spatial Clustering for point of interest detection

Realtime 3D Deep Motion Capture | C++, OpenCV, PyTorch

Oct. 2020 – Dec. 2020

- Implemented a method of inferring a full character's 3d pose using only a camera as an input
- Inspired by a EECV 2020 research paper to implement the algorithm

Sketch-based Shape Retrieval | Python, C++, OpenGL

Sep. 2020 – Dec. 2020

- Implemented a method to find any specific 3d model in a database using a drawing as an input
- Succeeded to faithfully retrieve several simple 3D shapes by using a single drawing given by a user

Visit  my website to know more about me and my projects!

HONORS AND AWARDS

FRQNT doctoral training scholarship: 25000\$ (x4 years)	Mar. 2025
Distinguished Paper Award at CP2023, Toronto	Sept. 2023
MITACS Accelerate scholarship: 30000\$	Mar. 2023
Oustanding Investment Mention, Ecole Polytechnique de Paris	Jul. 2022
Vallet Fondation scholarships for outstanding CPGE students: 5000€ (x2 years)	2018

TEACHING EXPERIENCE

Teaching Assistant	Fall 2025
<i>IFT6390: Fundamentals of machine learning</i>	
Teaching Assistant	Fall 2022
<i>INF8215, Artificial Intelligence : Algorithms and methods</i>	
Teaching Assistant	Fall 2021
<i>INF8215, Artificial Intelligence : Algorithms and methods</i>	
Teaching Assistant	Nov. 2018 – Mar. 2019
<i>Ministry of National Education</i>	<i>France</i>
• Responsible for a group of up to 20 undergraduate students during scientific workshops	
• Worked alongside the academic team to prepare students for entrance exams	

COMMUNITY INVOLVEMENT AND SERVICE

Tea Talks Committee Member – Research Seminar held at Mila	2025
Speaker at AI Summer School in Benin (EEIA) – Supporting Underserved Communities	2025
Reviewer for NeurIPS 2025 NewInML Workshop	2025
Reviewer for NeurIPS 2024 CALM Workshop, MAIS 2024, HRAIM 2024	2024
Reviewer for CP2023	2023
President of Nuit du Styx festival	2020
• Oversaw general organization and logistics for an electronic music festival with over 2000 attendees	
Member of Rethorix, Public Speaking Club	2019
• Organized an eloquence contest between schools in the Plateau de Saclay area	

SKILLS & HOBBIES

Languages: French : Native | English : Fluent | Russian : Primary
Developer Toolbox: Pytorch, Lightning, Git, Hydra, HPC, WandB, SLURM, CI Testing
Programming Languages: Python, Julia, C++, R

Activities: Outdoor climbing, Surfing, Snowboarding, mountain hiking, UAV robotics

REFERENCE

Prof. Dhanya Sridhar (Ph.D. advisor)
Assistant Professor at UdeM, Core academic member at MILA - AI CIFAR Chair holder
Email : dhanya.sridhar@mila.quebec

Dr. Alexandre Lacoste
Staff Research Engineer, ServiceNow Research
Email : alexandre.lacoste@servicenow.com

Prof. Quentin Cappart (M.Sc. advisor)
Assistant Professor at Polytechnique Montréal
Email : quentin.cappart@polymtl.ca