

Tom Marty

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EDUCATION

Polytechnique Montréal

Montréal Canada

Master Thesis in Operationnal Research - CORAIL Research Group - GPA 3.80

Sep. 2021 –

- **Courses :** Représentation Learning (Aaron Courville) | Spectral Graph Theory (Guy Wolf) | Continual Learning (Irina Rish)
- **SeaPearl (Thesis):** Using Reinforcement-Learning and Graph representation to accelerate discrete optimization problem solving process - one paper in preparation for **CPAIOR 2023**

Ecole Polytechnique - X 2018

Paris, France

Bachelor Of Science in Computer Science, Minor in Applied Mathematics - GPA 3.84

Sep. 2018 – Jun. 2021

- **Theoretical Computer Science :** Graph Theory | Computational Geometry | Advanced Algorithmic
- **Applied Mathematics :** Optimisation | Statistical modeling | Deep Reinforcement Learning
- **Computer Graphics :** Computer Vision | Image Processing and Rendering

Lycée Jean-Baptiste Say

Paris, France

"Classe préparatoire" Intensive multi-disciplinary program leading to entrance exams - GPA 4.00 Sep. 2016 – Jun. 2018

EXPERIENCE

Research Supervisor and Teaching Assistant

Jan. 2022 – Sept. 2022

Corail Research Group

Montréal, Canada

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

Research Intern

Jan. 2021 – Sept. 2021

Corail Research Group

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 Development Intern

Jun. 2020 – Sept. 2020

Dronisos, drone light show company

Bordeaux, France

- Developed *Harmony*, a particle based meta-heuristic that secures massive drone swarms (NP-Complete)
- *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)

Teaching Assistant

Nov. 2018 – Mar. 2019

Ministry of National Education

Noyon, France

- Responsible for a group of up to 20 undergraduate students during scientific workshops
- Worked alongside the academic team to prepare students for entrance exams

PROJECTS

Adversarial Attacks on Sentiment Classification models | *Python, HuggingFace*

Feb. 2022 – May. 2022

- Adversarial fine-tuning 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
- Project supervised by Irina Rish, Facebook AI CIFAR Chair, MILA

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

Advanced 3d-pose Estimation | *Python, C++, PyTorch, OpenCV*

Oct. 2020 – Dec. 2020

- Implemented a method of inferring a full character's 3d pose using only a camera as an input
- Used 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

STUDENT ASSOCIATION

Public Speaking Club: Rethorix

Oct. 2019 – Oct. 2020

- Organization of an eloquence contest between the schools of the Plateau de Saclay

SKILLS & HOBBIES

Languages: French : Native | English : Fluent | Russian : Primary

Programming Languages: C/C++, Julia, Python, R, Pytorch

Developer Tools: Pycharm, CLion, Git, SCRUM Framework

Open-Source web service deployment: Nextcloud, Nginx, Swag, OpenMediaVault

Remote Controlled UAV: Conception | Building | Programmation | Testing | Adjustment

Sports: Outdoor climbing, Ski, Mountain hiking