Grégoire PETIT, PhD, Machine Learning Researcher

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Highly motivated Researcher, *PhD* in *Artificial Intelligence* at Ecole Nationale des Ponts et Chaussées, specializing in *Machine Learning* and *Continual Learning*. Dual Master's degree of IMT Atlantique (France) and Georgia Tech (USA), with a deep focus on *Machine Learning applications*.

Available for *AI PostDoc* position, about this topic.

Education

PhD in Computer Science, Continual Learning applied to Computer Vision 2020-2023, *France*
École des Ponts ParisTech, IMAGINE lab
AI / Machine Learning / Deep Learning / Dynamic Data > VISUM summer school.
Exemplar-Free Class-Incremental Learning > Publication record at top ML venues.

Master of Science in Computer Science (specialization Machine Learning). GPA: 4.0/4.0 2019-2020, *USA*
Georgia Institute of Technology
Master of Science in Computer Science, specialization Machine Learning.
Master's Project option, inner tree log density prediction from tree bark visual observation.
Inducted in the Honor Society.

Master of Engineering in Information Technology, Télécom Bretagne. GPA: 3.53/4.0 2017-2019, *France*
IMT Atlantique
General Engineering Program (Télécom Bretagne degree), in IT.
Admission through the national competitive examination for admission to the French "Grandes Écoles".

Academic research

My PhD thesis focused on *Exemplar-Free Class-Incremental Learning* (EFCIL) and introduces innovative *algorithms* that address the problem of *catastrophic forgetting*. These advances help to achieve a better balance between *stability* and *plasticity* in *machine learning systems*, thus significantly improving their ability to *learn and adapt in dynamic environments*.

An Analysis of Initial Training Strategies for Exemplar-Free Class-Incremental Learning 2024
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), accepted → forthcoming
***Petit Grégoire**, Soumm Michael, Feillet Eva, Popescu Adrian, Picard David, Hudelot Céline and Delezoide Bertrand*
Study that investigates the impact of initial training strategies and other factors on the performance of EFCIL.

PlaStIL: Plastic and Stable Memory-Free Class-Incremental Learning 2023
Second Conference on Lifelong Learning Agents (CoLLAs), in proceedings
***Petit Grégoire**, Popescu Adrian, Belouadah Eden, Picard David and Delezoide Bertrand*
PlaStIL combines a fixed feature extractor and small model tops to improve the stability-plasticity balance.

FeTrIL: Feature Translation for Exemplar-Free Class-Incremental Learning 2023
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), in proceedings
***Petit Grégoire**, Popescu Adrian, Schindler Hugo, Picard David and Delezoide Bertrand*
FeTrIL combines a fixed feature extractor and a pseudo-features generator to improve the stability-plasticity balance.

AdvisIL: A Class-Incremental Learning Advisor, in proceedings 2023
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV), in proceedings
*Feillet Eva, **Petit Grégoire**, Popescu Adrian, Reyboz Marina and Hudelot Céline*
AdvisIL recommends an adapted pair based on user-provided incremental process characteristics.

Skills

Professional Proficiency	Languages & Systems:	Python	MySQL	C++
Native Speaker		LaTeX	Bash	MATLAB
Conversational level		SLURM	git	
Basic level	Frameworks:	PyTorch	TensorFlow	NumPy
Basic level		pandas	scikit-learn	JAX

Soft skills: Leadership, Management, Autonomy, Dedication
Music: Saxophone (since 2007), Guitar (4 years), Piano (2 years), Computer Music (1 year in class, 4 years self-taught).

Focused on Research

Experience

3-year PhD contract at **CEA Tech** 2020-2023

AI / Machine Learning / Deep Learning / Dynamic Data > AI4media Colloquium
Supervision of a graduate end-of-course project student for 6 months > graduation final requirement of this graduate student.
Successfully commercialized advanced AI research outputs to a leading global semiconductor company, enhancing their technological capabilities and operational efficiency.

Teaching Assistant at **PARISTECH** 2021-2023

Machine Learning for Master of Engineering students > 36h of practical sessions.
Deep Learning for Master of Engineering students > 36h of practical sessions and semester project evaluation.
Advanced Machine Learning for Specialised Master Big Data and Artificial Intelligence students > 42h of practical session and final exam evaluation.

6-month AI engineer internship at **Air France** 2020

AI / Machine Learning / Computer vision around voice and face analysis issues. > Presented AI-driven solutions and research outcomes to the Security Directors of Air France, providing potential advancements in AI-based security.

Academic projects

Double reed bassoon with 3D printing technologies at **Conservatoire de Brest** 2019

4-month group project. Development and prototyping. Project management manager in a multicultural team of 5 people. Research Award (delivered by the university).

Dental healthcare with 3D printing methods at **TeamSoc21** 2019

4-month group project. Creation of a startup in a European context. Team of 3 European people.

Creation of an application at **Brittany Ferries** 2018

4-month group project. Creation of an application to give information to ferry passengers about cultural sites. Responsible for the business model, the communication, and the ethical aspect of our product. In a multicultural team of 8 people.

Renovation of two broken 3D printers at **IMT Atlantique - Development project** 2018

4-month group project. Hardware and software. Creation of an autocalibration method.

Creation of a vegetable garden at **IMT Atlantique - Sustainable development project** 2018

4-month group project. Creation of a vegetable garden on the Brest campus. "Action of the Year" award, IMT Atlantique, Brest campus (delivered by the university).

Creation of a robot at **IMT Atlantique - Robotics project** 2017

2-month group project. Creation of a robot, driven with an Android application by Bluetooth, which communicates with the environment by RFID. Equipment set-up and IT development, in a team of 9 people. Manager of hardware-software coordination.

Services

Sound designer & Music composer at **Independant game - WOLF** 2022-current

Designing the sounds and composing music using Ableton for an independent game designed in a team of 3 people.

Hiking organizer at **Hiking club** 2021-2023

Organization of hikes in the Paris region, according to level, desires, and type of terrain.

Co-founder, CTO at **iCare** 2021

Led the development of a platform designed to streamline investments in corporate social responsibility initiatives.

Board Member, TVonIP Project Manager at **ResEl** 2017-2019

Participated in maintaining the campus-wide internet service provider (ResEl), which served over 800 subscribers and offered a range of services, including TV on IP, FTP indexer, mailing lists, and website management among others.

Vice-President at **Music Club, Brest Campus** 2017-2019

Managed funding and coordinated musical events, in addition to liaising with other artistic clubs on campus.

President at **Marching Band, Brest Campus** 2017-2019

Revived the marching band after a year-long hiatus by formalizing the structure, securing funds, repairing instruments, and providing saxophone lessons.