

Habib Slim

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Interests

- Continual learning and representation learning, few-shot and zero-shot learning, adversarial machine learning, generative models and image-to-image translation, ...
- *More broadly:* Designing machine learning algorithms with applications to challenging computer vision problems.

Education

2019 – 2021 **Master of Research (Data Science)**

ENSIMAG & UNIVERSITÉ GRENOBLE-ALPES (DUAL DEGREE) - GRENOBLE, FRANCE
GPA: 17.24/20. **Honors:** Summa cum laude (mention "très bien"). **Rank:** Ranked 1st.

Main courses : ML for Comp. Vis. and Audio, Kernel methods for ML, Fundamentals of Probabilistic Data Mining, Intelligent Systems

Advisors: Massih-Reza Amini, Martin Heusse

Awards: ANR Excellence Scholarship

2018 – 2021 **Master of Engineering (Applied Mathematics and Computer Science)**

ENSIMAG - GRENOBLE, FRANCE

Main courses: Information Theory, Language Theory, Operations Research, Probability and Statistics

2016 – 2018 **University Diploma (Applied Mathematics and Computer Science)**

UNIVERSITÉ GRENOBLE-ALPES - GRENOBLE, FRANCE

GPA: 17.13/20. **Rank:** Ranked 2nd.

Admitted to Grenoble-INP Ensimag (top 3% admitted, french engineering "Grande École").

Experience

03/2021 – 09/2021 **Research Intern**

UNIVERSITÉ PARIS-SACLAY, CEA-LIST - PARIS, FRANCE

Supervised by Dr. Adrian Popescu

Working on continual learning methods for image classification. Specifically focusing on methods which do not exploit a rehearsal memory, a relatively unexplored setting in the literature. Publication accepted at WACV 2022 (first-author).

02/2020 – 06/2020 **Research Intern**

UNIVERSITÉ GRENOBLE-ALPES, LIG-CNRS - GRENOBLE, FRANCE

Supervised by Pr. Georges Quénot

Working on improving the diversity of class-conditional generative networks for image classification, using sample reweighting and boosting techniques (in the larger context of generator-based rehearsal methods in continual learning).

03/2019 – 03/2020 **Technical Advisor**

NSIGMA - GRENOBLE, FRANCE

Tech stack advising and cost estimates for various studies at Nsigma Junior-Entreprise (junior company of the ENSIMAG engineering school). Project supervision in collaboration with a small team of students. Client projects ranging from small mobile applications to simple AI-based tools.

02/2018 – 08/2018 **Software Engineering Intern**
05/2019 – 07/2019 **UNIVERSITÉ GRENOBLE-ALPES, LIG-CNRS - GRENOBLE, FRANCE**
Supervised by [Pr. Christophe Brouard](#) and [Pr. Jean-Pierre Chevallet](#)
Conception and development of a data extraction system from Wikipedia, in the context of information retrieval and document classification based on hebbian learning.

Publications

- **Habib Slim*, Eden B.*, Adrian P., Darian O. – Dataset Knowledge Transfer for Class-Incremental Learning without Memory.**
Accepted at IEEE Winter Conference on Applications of Computer Vision (WACV), 2022
- **Christophe B., Jean-Pierre C., Théo O, Habib Slim – WIB: an integrated Wikipedia browser for participatory evaluation of relevance models.**
Accepted at Extraction et Gestion des Connaissances (EGC), 2019

Skills

Languages	French (native), English (proficient: ETS TOEIC 985/990)
Programming	Python/Ruby - C/C++ - Java/C#
Libraries	PyTorch - OpenCV - Eigen - OpenMPI

Selected Projects

Knowledge Transfer for Memoryless CIL

Supervisor: [Adrian Popescu](#)

Focused on class-incremental learning for computer vision, a specific setting of continual learning in which image classes are split into multiple tasks sequentially learned by an agent. Worked on a novel method using both regularization and bias correction, which does not make use of a rehearsal memory. Method proposed provides consistent gains over the previous state-of-the-art baselines. Publication accepted at WACV 2022.

Boosting Generative Networks for Incremental Learning

Supervisor: [Georges Quénot](#)

Investigated the effects of sampling using a truncated latent, data transformations and ensembling on the accuracy of classifiers trained on GAN-generated synthetic samples, when evaluated on real data. Showed that combining data transformations with on-the-fly-generation gave results within 5% to the baseline accuracy obtained when training on real data.

Kernel Methods for Binding Site Prediction

Tutor: [Julien Mairal](#)

Data challenge to predict the binding nature of DNA sequence regions to specific transcription factors, using kernels. Implemented various string kernels and classifiers from scratch (KRR, KLR, SVMs), using Python and the cvxopt library.

Speeding up DNN training

Tutor: [Christophe Picard](#)

Improved the training performance of deep image classifiers using simple distributed algorithms. Implemented a minimal DNN library with some basic layers (linear, dropout, activations and losses) alongside simple distributed learning algorithms, with C++, MPI and Eigen. Conducted a comprehensive evaluation of the speedups obtained on MNIST and Fashion-MNIST.