

Arthur Douillard

ENGINEER, SCIENTIST, AND TEACHER IN DEEP/MACHINE LEARNING

Paris, France

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Education

PhD in Computer Science

Paris, France

SORBONNE UNIVERSITY (LIP6) Advisor: Pr. Matthieu Cord

Jul 2019 - Now

- In-going PhD thesis on Continual Learning for Computer Vision.

M.S. in Computer Science (*Diplôme d'ingénieur*) Major GPA: 3.7 / 4.0

Paris, France

EPITA Advisor: Pr. Reda Dehak

2014 - 2018

- Machine Learning, Deep Learning, NLP, Python, C++, Golang, Scala/Kafka/Spark, Image processing, Text Mining
- Stats & Proba, Linear Algebra, Convex Optimization, Logic

Publications

DyTox: Transformers for Continual Learning with DYNAMIC TOken eXpansion

Under review

ARTHUR DOUILLARD, ALEXANDRE RAMÉ, GUILLAUME COUAIRON, MATTHIEU CORD

2021

Tackling Catastrophic Forgetting and Background Shift in Continual Semantic Segmentation

Under review at TPAMI

ARTHUR DOUILLARD, YIFU CHEN, ARNAUD DAPOGNY, MATTHIEU CORD

2021

PLOP: Learning without Forgetting for Continual Semantic Segmentation

CVPR

ARTHUR DOUILLARD, YIFU CHEN, ARNAUD DAPOGNY, MATTHIEU CORD

2021

Continuum: Simple Management of Complex Continual Learning Scenarios

CVPR Workshop

ARTHUR DOUILLARD*, TIMOTHÉE LESORT*

2021

Insights from the Future for Continual Learning

CVPR Workshop

ARTHUR DOUILLARD, EDUARDO VALLE, CHARLES OLLION, THOMAS ROBERT, MATTHIEU CORD

2021

PODNet: Pooled Outputs Distillation for Small-Tasks Incremental Learning

ECCV

ARTHUR DOUILLARD, MATTHIEU CORD, CHARLES OLLION, THOMAS ROBERT, EDUARDO VALLE

2020

CORE: Color Regression for Multiple Colors Fashion Garments

arXiv

ALEXANDRE RAME, ARTHUR DOUILLARD

2019

Experience

Heuritech

Paris, France

RESEARCH SCIENTIST Advisor: Dr. Charles Ollion, Dr. Thomas Robert

July 2019 - Now

- Improving SotA models in production and advising the R&D team.

RESEARCH ENGINEER Advisor: Alexandre Ramé

Sept 2018 - June 2019

- Developed novel attention mechanisms leading up to a new proposed vertical (logo detection in the wild).
- Developed hard negative mining for metric-based models, and multi-modal image retrieval.
- Speed up training time of DNNs by 10x and inference time by up to 5x.
- Implemented numerous research papers in production leading to better forecast our product.

Dataiku

Paris, France

RESEARCH ENGINEER INTERN Advisor: Dr. Léo Dreyfus-Schmidt

Feb - Aug 2018

- Implemented deep learning models for computer vision (transfer learning, detection, training schedules, fewshot, autoML, speech recognition, etc.) that were integrated to the Dataiku platform.
- Won the 1st & 2nd prize of the NATO Innovation Challenge as the lead scientist of my team with object detection on satellite imagery.
- Organized & presented internal conferences on deep learning.

ZebraIA

Paris, France

GRADUATE STUDENT RESEARCHER Advisor: Dr. Guillaume Palacios

Aug 2017 - Jan 2018

- Implemented Deep Learning NLP papers for a medical chatbot (word2vec, pos-tagging, sentence classification, data augmentation).

MyDrive Solutions

London, United Kingdom

DATA SCIENTIST INTERN Advisor: Dr. Zoufcar S. Younes

Sept 2016 - Jan 2017

- Migrated the mapping database from Here Maps to OpenStreetMaps reducing cost by 6 figures £
- Analyzed and applied Machine Learning models on driver and medical data in Python (Pandas, Scikit-Learn, Keras) and R for clients across the world (England, Italy, France, Indonesia)

Teaching

- EPITA** · Master level · DEEP LEARNING LECTURER FOR +60 STUDENTS PER YEAR 2019 - Now
- Course with slides + google colab + anki cards used by more than 7,000 unique visitors per month [LINK]
- SORBONNE UNIVERSITÉ** · Master level · DEEP LEARNING TEACHER ASSISTANT FOR +70 STUDENTS PER YEAR 2019 - Now
- EPITA** · Master level · DEEP LEARNING TEACHER ASSISTANT 2018
- Help Dr. Charles Ollion for CNN, Object Detection, and Segmentation
- EPITA** · Bachelor level · COMPUTER SCIENCE TEACHER ASSISTANT 2016 - 2018
- C/C++ Programming, Unix, Shell, Algorithm theory, Java, SQL, Web Programming, Project Management
 - Responsible of the course materials produced by 30 teacher assistants

Personal Projects

- Continual Learning data loaders** for easy research reproducibility [LINK]. Used by multiple research teams across the world and by the CVPR21 Continual competition organizers.
- Implementation of a dozen papers in Pytorch and Tensorflow cumulating to more than +700 ★ [LINK].
- Blog** where I explain Deep Learning concepts [LINK] w/ 6k visitors per month
- Memory allocator on a **cluster of machines using MPI**.
- Minor contribution to **scikit-learn** fixing a bug in the RFECV algorithm [LINK].
- Efficient implementation of Damerau-Levenshtein distance with **Radix Trie** and mmap in C++.
- Compiler front-end/back-end** for the language Tiger, coded in C++, YACC, Bison, and several flavors of ASM.

Skills

- Programming Languages:** Python C/C++ Shell SQL Java Scala Golang Prolog Haskell R Latex
- Data Science:** Pytorch Tensorflow / Keras Jax/Haiku Scikit-Learn Numpy Pandas
- Tools & OS:** Linux MacOS Git Jupyter Vim VSCode
- Languages:** French (native) English (TOEIC 965/990) Spanish Mandarin (Very beginner) Esperanto (notions)

Talks & Press

- PARIS MACHINE LEARNING MEETUP**, CONTINUAL LEARNING FOR SEMANTIC SEGMENTATION *France* | October 2021
- EEML**, CONTINUAL LEARNING FOR SEMANTIC SEGMENTATION *Hungary* | July 2021
- COMPUTER VISION TALKS**, CONTINUAL LEARNING FOR SEMANTIC SEGMENTATION AND OBJECT REHEARSAL *India* | June 2021
- CVPR DAILY JOURNAL**, FEATURING OF MY WORK IN THE DAILY PICK OF CVPR *USA* | June 2021
- CVPR WORKSHOP**, INSIGHTS FROM THE FUTURE FOR CONTINUAL LEARNING *USA* | June 2021
- CVPR**, PLOP: LEARNING WITHOUT FORGETTING FOR CONTINUAL SEMANTIC SEGMENTATION *USA* | June 2021
- CONTINUALAI**, CONTINUAL LEARNING OUTSIDE FULL SUPERVISION [VIDEO] *Italy* | Apr 2021
- CONTINUALAI**, CONTINUUM: SIMPLE MANAGEMENT OF COMPLEX CONTINUAL LEARNING SCENARIOS [VIDEO] *Italy* | Apr 2021
- DATAIKU**, CONTINUAL LEARNING FOR SEMANTIC SEGMENTATION *France* | Jan 2021
- EXTRALITY**, CONTINUAL LEARNING FOR SEMANTIC SEGMENTATION *France* | Nov 2020
- ECCV**, PODNET: SMALL-TASKS INCREMENTAL LEARNING [VIDEO] *UK* | Aug 2020
- CONTINUALAI**, PODNET: SMALL-TASKS INCREMENTAL LEARNING [VIDEO] *Italy* | May 2020
- SORBONNE**, INCREMENTAL LEARNING *France* | Jun 2019
- DATAIKU**, LOWSHOT LEARNING *France* | Aug 2018
- NATO**, NATO INNOVATION CHALLENGE (IN FRONT OF THE SUPREME COMMANDER AND A SMALL DOZEN OF GENERALS ACROSS THE WORLD) *France* | May 2018
- DATAIKU**, OBJECT DETECTION WITH DEEP LEARNING *France* | April 2018
- AGROPARISTECH**, STATE OF THE FOODTECH IN FRANCE *France* | Jan 2018

Academic Services

- NEUROCOMPUTING** · REVIEWER 2021 - Now
- INTELLIGENT TRANSPORTATION SYSTEMS SOCIETY** · REVIEWER 2021 - Now
- TPAMI** · REVIEWER 2021 - Now
- TRANSACTIONS ON KNOWLEDGE AND DATA ENGINEERING** · REVIEWER 2021 - Now
- ICIAP's CL4REAL WORKSHOP** · PROGRAM COMMITTEE 2022