Arthur **Douillard**

CODER, 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*

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).
- 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, etc.) that are still in production 2 years later.
- Won the 1st & 2nd prize of the NATO Innovation Challenge as the lead scientist of my team with satellite imagery project.
- Organized & presented internal conferences on deep learning.

ZebrIA   *Paris, France*

GRADUATE STUDENT RESEARCHER   *Advisor: Dr. Guillaume Palacios*   *Aug 2017 - Jan 2018*

- Researched & Implemented Deep Learning NLP papers for a medical chatbot.

MyDrive Solutions   *London, United Kingdom*

DATA SCIENTIST INTERN   *Advisor: Dr. Zoulficar 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 algorithms on driver and medical data in Python (Pandas, Scikit-Learn, Keras) and R for multiple clients across the world (England, Italy, France, Indonesia)

Teaching

EPITA · *Master level* · Deep Learning Lecturer for +60 students per year	*2019 - Now*
Sorbonne Université · *Master level* · Deep Learning Teacher Assistant for +70 students per year	*2019 - Now*
EPITA · *Bachelor 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 cummulating to more than 300 ★ [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's IV · Reviewer	*2021 - Now*
TPAMI · Reviewer	*2021 - Now*