

# 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

### 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.

### ZebraIA

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

<b>EPITA</b> · <i>Master level</i> · DEEP LEARNING LECTURER FOR +60 STUDENTS PER YEAR	2019 - Now
<b>SORBONNE UNIVERSITÉ</b> · <i>Master level</i> · DEEP LEARNING TEACHER ASSISTANT FOR +70 STUDENTS PER YEAR	2019 - Now
<b>EPITA</b> · <i>Bachelor level</i> · DEEP LEARNING TEACHER ASSISTANT	2018
<ul style="list-style-type: none"> <li>Help Dr. Charles Ollion for CNN, Object Detection, and Segmentation</li> </ul>	
<b>EPITA</b> · <i>Bachelor level</i> · COMPUTER SCIENCE TEACHER ASSISTANT	2016 - 2018
<ul style="list-style-type: none"> <li>C/C++ Programming, Unix, Shell, Algorithm theory, Java, SQL, Web Programming, Project Management</li> <li>Responsible of the course materials produced by 30 teacher assistants</li> </ul>	

## 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 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

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

## Talks & Press

<b>COMPUTER VISION TALKS</b> , CONTINUAL LEARNING FOR SEMANTIC SEGMENTATION AND OBJECT REHEARSAL	June 2021
<b>CVPR DAILY JOURNAL</b> , FEATURING OF MY WORK IN THE DAILY PICK OF CVPR	June 2021
<b>CVPR WORKSHOP</b> , INSIGHTS FROM THE FUTURE FOR CONTINUAL LEARNING	June 2021
<b>CVPR</b> , PLOP: LEARNING WITHOUT FORGETTING FOR CONTINUAL SEMANTIC SEGMENTATION	June 2021
<b>CONTINUALAI</b> , CONTINUAL LEARNING OUTSIDE FULL SUPERVISION [ <a href="#">VIDEO</a> ]	Apr 2021
<b>CONTINUALAI</b> , CONTINUUM: SIMPLE MANAGEMENT OF COMPLEX CONTINUAL LEARNING SCENARIOS [ <a href="#">VIDEO</a> ]	Apr 2021
<b>DATAIKU</b> , CONTINUAL LEARNING FOR SEMANTIC SEGMENTATION	Jan 2021
<b>EXTRALITY</b> , CONTINUAL LEARNING FOR SEMANTIC SEGMENTATION	Nov 2020
<b>ECCV</b> , PODNET: SMALL-TASKS INCREMENTAL LEARNING [ <a href="#">VIDEO</a> ]	Aug 2020
<b>CONTINUALAI</b> , PODNET: SMALL-TASKS INCREMENTAL LEARNING [ <a href="#">VIDEO</a> ]	May 2020
<b>SORBONNE</b> , INCREMENTAL LEARNING	Jun 2019
<b>DATAIKU</b> , LOWSHOT LEARNING	Aug 2018
<b>NATO</b> , NATO INNOVATION CHALLENGE (IN FRONT OF THE SUPREME COMMANDER AND A SMALL DOZEN OF GENERALS ACROSS THE WORLD)	May 2018
<b>DATAIKU</b> , OBJECT DETECTION WITH DEEP LEARNING	April 2018
<b>AGROPARISTECH</b> , STATE OF THE FOODTECH IN FRANCE	Jan 2018

## Academic Services

<b>NEUROCOMPUTING</b> · REVIEWER	2021 - Now
<b>INTELLIGENT TRANSPORTATION SYSTEMS SOCIETY's IV</b> · REVIEWER	2021 - Now
<b>TPAMI</b> · REVIEWER	2021 - Now