# Arthur **Zucker**

2 rue Galvani, 91300, Massy, France

## MSc Machine Learning Student at ENS Paris-Saclay | Looking for a 4 to 6 months internship

in arthur-zucker

**1** +33687661840

My website

@ arthur.zucker@ens-paris-saclay.fr

i 22 years old

In order to graduate from my MSc, I need to complete a Research oriented internship. I have a lot of experience in applied mathematics and programming, yet I specialize in deep learning. I wish to work on Deep Learning projects, and would love to participate in highly technical research. I am open to pursue the internship during a PhD.



AI, Deep Learning Python: Pytorch, Tensorflow, Keras, Open Cv, Librosa

Python,C,C++, R, MatLab,Fortran, Shell,HTML, CSS, Java, MIPS, Go Programming languages

Programming tools Gitlab & Github, Team Viewer, Google Colabs, Flutter (Dart)

> Modelling **GAML** (Multi agent programming language)

Editing languages MarkDown, ŁTFX, Jupyter Notebook

Mathematics for deep learning Optimisation and Computation, Statistics and Probability, Complexity and Calculus

High Performance Computing (GPU programming, OpenMP, MPI, CUDA), Advanced Crypto-

graphy (openssl), Game programming (GODOT), Quantum Computing



## PROFESSIONAL EXPERIENCES

Other

Feb. 22nd 2021 Aug. 20th 2021

#### Computer Vision intern | DeepLearning, IMAGE PROCESSING TEAM,

SAFRAN Massy, France **9** 

> Explored and synthesized the state of the art (SOTA) in the field of RGBD semantic segmentation

- > Implemented spatially deformable convolution on top of SOTA Hierarchical Multi-Scale Attention architecture blocks to increase semantic segmentation results.
- > Rigorously compared the effect of the added new blocks in terms various metrics in an ablation study.
- > Ported deformable convolutions from pytorch 0.4 to pytorch 1.4+

Python Pytorch Computer Vision Research Semantic Segmentation RGB-D

Results

Successfully implemented different architectures, reaching performances comparable to SOTA

July 28th 2020 now

#### Research Assistant | Deep Learning, BIOSPHERE LABORATORY,

Kyoto University, Japan ♥

- > Developed a 3 steps PAM (Passive Acoustic Monitoring) pipeline for Flying Foxes (Mega-Bats)
- > Implemented an automatic audio event detector using SOTA DNN, various architectures and novel ideas.
- > Worked on one-shot learning speaker recognition-related tasks using siamese networks.

Python Pytorch Audio Processing Speaker recognition

Engagement

The research is still going on as a side project. Recently presented a poster to the  $15^{th}$  European Bat Research Symposium (EBRS) conference. Find more about that on my website

June 9th 2019 Aug. 9th 2019

### Intern | AI software developer, AI TEAM,

Chainos Solution, Hanoï, Vietnam **?** 

- > Worked on computer vision projects: image to excel, CAD reader, face recognition
- > Received Deep Learning courses and python oriented for Al trainings
- > First approach to Face Recognition using haar-like features
- > Helped to develop an invoice reader API

Python Tensorflow Computer vision Research publication

Results

Wrote a research article with a teammate on Automatic Table structure recognition

## Trainee | Computer Scientist, BIO-INFORMATIC LABORATORY,

Kyoto University, Japan ♥

July 1st 2018 Aug. 30th 2018

- > Developed a solution in R for automatic audio segmentation of bat calls in natural recordings
- > Field work: captured and studied bats under the tutoring of Dr. Vincenot
- > Research driven by the need to protect the species from culling
- > Modeled bat trajectories

R RStudio MatLab Bats Signal processing Research

Engagement | Became a member of the IBRG (https://www.batresearch.net/)



2021-2022 MSc Machine Learning at ENS Paris-Saclay, in the "Mathematics, Vision and Learning" (MVA), Paris, France.

Enrolled in: Reinforcement Learning, Computer Vision and object recognition, Convex Optimisation, Advanced Learning for Text and Graphs, Deep Learning

2016-2021 **Engineering degree** at **Polytech Sorbonne, Sorbonne University**, in the "Mathematics Applied to Compu-

ter Science". Major of promotion from 2019 to 2021

## PROJECTS

#### DEEP LEARNING: STATIC AND DYNAMIC HAND GESTURES RECOGNITION

2020 - 2021

Gesture classification using 29 different features. Implemented and evaluated classical ML algorithms as well as siamese Neural Networks. Non-guided, autonomous Neural Network architecture research.

Pytorch | Siamese Network | Research

#### CUDA HIGH PERFORMANCE COMPUTING PROJECT

2020 - 2021

Parallelisation of the Batch merge and the batch sort algorithm using different type of computer memory.

CUDA C++ Optimisation

#### **○** FINITE ELEMENT MODELLING

2020 - 2021

Implemented Galerkin's Finite element Method (GFEM)

Python Modelling Github

Twizzy contest

2020 - 2021

Earned the second place in the national twizzy contest: an innovation contest organised by Renault and Segula technologies with more than 80 french engineering schools competing.

Innovation | FLutter | Project management | SCRUM

## **66** References

#### @ Dr. Myriam Compte

Former director of Polytech Sorbonne's engineeering school Sorbonne University, France

#### @ Dr. Vincenot

Assistant professor,researcher Kyoto university, Kyoto Japan

@ Dr. Patrick Gallinari

Deep Learning researcher LIP6 laboratory, Sorbonne University, France

#### @ Dr. Bouillaguet Charles

Cryptography researcher LIP6 laboratory, Sorbonne University, France

### @ Dr. Hacène Ouzia

Optimisation researcher LIP6 laboratory, Sorbonne University, France

#### ② Dr. Xavier Tannier

Responsible of the Applied Mathematics and Computer Science promotion, NLP researcher Sorbonne University

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## Courses Followed

**x<sub>2</sub>** Mathematics : Topology, Linear algebra, Numerical Analysis, Convolutions & Fourier, Polynomial system resolution, Analysis

Differential Calculus, EDP analysis, Finite Element methods

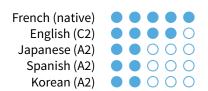
Statistics: Statistics and probabilities, Data analysis, Inferential statistics, statistical learning

☐ Computer Science : General Algorithms, Distributed Computing, Decidability and complexity, Floating point computation, Signal Processing, HPC, Security and Cryptography, Databases

AI: Reinforcement Learning, Computer Vision and Object recognition, Deep Learning, Advanced Learning for Text and Graph, Convex optimization and applications in machine learning, Introduction to Medical Image Analysis

Management : Agile development, SCRUM

# LANGUAGES



# + Profile

- > Curious and passionate about deep learning.
- > Open minded, thrive to explore new ideas and new cultures.
- > Optimistic and great at working in teams, used to be team leader.
- > Disciplined and hardworking.