

# LAROCHE Charles

  
<https://github.com/claroche-r>

## EDUCATION

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**Université Paris Cité x GoPro**

*July 2021 - July 2024*

PhD in applied mathematics: *Deep Learning for Image Restoration for Digital Photography*

**University Paris Saclay**

*September 2019 - September 2020*

Master 2 in statistics and machine learning (StatML).

**ENSAE IP Paris**

*September 2017 - September 2020*

Leading French engineering school in data science, statistics and economy.

## WORK EXPERIENCE

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**GoPro, Paris**

*June 2020 - Ongoing*

Internship followed by a PhD between GoPro and Université Paris Cité under CIFRE funding. The goal of the PhD is to design various image restoration algorithms. The PhD title is *Deep Learning for Image Restoration for Digital Photography*.

**Uizard Technologies, Copenhagen**

*June 2019 - September 2019*

Internship Image refinement for semi-supervised learning with Generative Adversarial Networks (cycleGAN, simGAN and style-transfer).

**CNRS (CREST), Palaiseau**

*June 2018 - September 2018*

Internship: Robust machine learning with Median of Means (MOM) estimators under the supervision of Guillaume Lécué. Application to LASSO, matching pursuit and cross-validation. The project continued during my second year of engineering school to design a training loop for deep neural networks using MOM techniques.

## RESEARCH ARTICLES

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**Charles Laroche, Andrés Almansa, Eva Coupeté. Fast Diffusion EM: a diffusion model for blind inverse problems with application to deconvolution, IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2024.**

**Charles Laroche, Andrés Almansa, Eva Coupeté, Matias Tassano. Provably Convergent Plug & Play Linearized ADMM, applied to Deblurring Spatially Varying Kernels, IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2023.**

**Charles Laroche, Andrés Almansa, Matias Tassano. Deep Model-Based Super-Resolution with Non-uniform Blur, IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2023.**

**C. Laroche and Matias Tassano. Bridging the Domain Gap in Real World Super-Resolution, IEEE International Conference on Image Processing (ICIP) 2022.**

## TALKS

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**3rd IMA Conference on Inverse Problems from Theory to Application, Edinburgh, UK.**  
Deep model-based super-resolution with non-uniform blur. May 2022

**Workshop of Mathematical Models for Plug-and-play Image Restoration, Paris, France.**  
Provably Convergent Plug & Play Linearized ADMM applied to Deblurring Spatially Varying Kernels.  
December 2022

## TEACHING

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**Algorithm and Programming at ENSAE IP Paris** *2020 - 2022*

**Python for Data Science at ENSAE IP Paris** *2022 - 2023*

## LANGUAGES

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French: Mother tongue, English: TOIEC 935, Spanish: spoken and written.

## HOBBIES

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Mountain-bike (Federal coach and competitor), running, skiing and all mountain-related activities.