

Julien Gaubil

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Research Experience

MIT CSAIL - Visiting student

Feb. 2024 – Present

Scene Representation Group | Advisor: Prof. Vincent Sitzmann

Cambridge, MA, USA

- **Advancing self-supervised 3D generation** for static scenes, replacing domain-specific architectures by input/output inductive biases such as projective 3D geometry.

Princeton University – Master's Thesis

May – Sep. 2023

Princeton Vision & Learning Lab | Advisor: Prof. Jia Deng

Princeton, NJ, USA

- **Developed Scene Representations for highly-dynamic scenes** featuring rapid and non-rigid motion, improving separation of static-dynamic components from existing pose-free baseline.
- **Created a dataset and benchmark for evaluation**, which outlined my method as the only capable of synthesizing novel views of highly-dynamic parts while maintaining temporal consistency.

École Nationale des Ponts et Chaussées – Research Intern

Apr. – Sep. 2022

ENPC - Imagine Team | Advisor: Prof. Mathieu Aubry

Paris Area, France

- **Enhanced visual character discovery** in historical documents from 7.7% to 0.85% CER on Google1000 dataset by integrating a weak textual supervision into an unsupervised baseline.
- **Improved interpretability of learnt visual prototypes** by designing a variant of the A^* graph traversal algorithm to optimize prototypes positioning in an analysis-by-synthesis framework.
- Co-authored an article awarded the **ICDAR 2024 Best paper Award** (from 144 admitted). [1]

National Center for Scientific Research – Research Intern

May – Aug. 2021

CNRS LIRIS | Advisor: Prof. Emmanuel Dellandrea

Lyon Area, France

- Conducted literature review, implemented 6D Pose Estimation and Instance Segmentation baselines for real-time Robotics in cluttered environments.

Education

École Normale Supérieure Paris-Saclay

2022 – 2023

MSc Mathematics, Vision & Learning (MVA) | Mathematics Department

- ENS are France's most prestigious institutions for training future researchers. MVA is the French leading MSc in **ML & Computer Vision**. Graduated with highest honors (GPA: 3.9/4.0).
- Relevant courses: Geometric Data Analysis, Kernel Methods for ML, Generative modeling for images, 3D Computer Vision, Computer Vision, Point clouds & 3D modeling.

École Centrale de Lyon

2019 – 2022

French Engineering diploma - BSc and MSc in Engineering | Mathematics department

- ECL is one of the top French "Grande École", majored in Applied Mathematics (MSc GPA: 3.79/4.0).
- Obtained a **BSc in pure Mathematics** (20-21') and an **MSc in Applied Mathematics** (21-22') from Lyon 1 University in **parallel with my primary curriculum**.
- Relevant courses: Deep Learning, Advanced ML, Inverse problems & Imaging, Stochastic Processes, High-Performance Computing, Groups and Geometry.

French Preparatory classes

2017 - 2019

Undergraduate program | Mathematics section

- Selective and competitive program to prepare for nationwide entrance examination for the top French Engineering schools. GPA: 120/120, Highest Honors.

Publication

- [1] I. Siglidis, N. Gonthier, **J. Gaubil**, T. Monnier, and M. Aubry, "*The Learnable Typewriter: A Generative Approach to Text Line Analysis*". In: 2024 International Conference on Document Analysis and Recognition (ICDAR), **Best Paper Award**.

Personal Projects

Course projects that I share and are relevant to my research interests, more details on my [webpage](#).

- *Self-Supervised Learning of Visual Representations* (MVA - Computer Vision) [report](#)
- *Point-based neural rendering and View Synthesis* (MVA - Point Cloud and 3D Modeling) [report](#)
- *Weakly-supervised analysis of text-line images* (MVA - Deep Learning) [code](#) [report](#)
- *Gamma Denoising Diffusion Implicit Models* (MVA - Generative Models for images) [report](#)

Distinctions – Scholarships

IDEX scholarship for international mobility

2023

- Awarded by Paris-Saclay University for excellence in academic results (~2.5k\$).

Honors from the jury – École Centrale de Lyon

2022

- Engineering diploma from École Centrale de Lyon awarded with highest distinction ('Félicitations du jury') for outstanding academic performance.

Skills

Programming: Python, C++, R, Matlab, SQL. Deep Learning/Computer Vision: PyTorch, Jax, TensorFlow.

Languages: English (proficient, C2) TOEFL 113/120, French (Native), Spanish (intermediate).