Julien Philip

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Professional Experience

2023 - Present **Research Scientist 2 - Adobe**, London Lab
Working on efficient representations for Neural Radiance Fields, Diffusion priors for Relightable NeRFs and data generation to train 3D Generative models.

2021 - 2023 **Research Scientist - Adobe**, London Lab
Participated in various research projects (see publications), collaborated with 7 interns. Engineered, built and maintained a modular NeRF codebase, worked on a realtime web-based NeRF volumetric renderer. Submitted 5 patent applications.

2019 **Research Intern - Adobe**, San Francisco - Summer internship - C++/Pytorch
Developed the first relightable neural rendering method for interior scenes with full user control
Our 2018 project was one of the 11 selected out of more than 200 and **presented at Adobe MAX** as LightRightSneak.

2016 - 2018 **Teaching Assistant - Polytech Nice**, France - Javascript/Php
Designed and taught two web programming courses to **100**, second year, undergraduate students.

2016 **Research Intern - Airbus Defence and Space**, Toulouse, France - OpenGL/C++
Designed a mesh cleaning tool based on PCA, **100x** faster than manual cleaning - cyril.robin@airbus.com

Education

2020 - 2021 **PostDoc - Université Côte d'Azur - Inria** Oct 2020 - Jan 2021
Sophia Antipolis, France. Graphdeco Team. Supervised by **Dr George Drettakis** - george.drettakis@inria.fr **4 Months**

2016 - 2020 **PhD in Computer Graphics and Machine Learning - Université Côte d'Azur - Inria**
Sophia Antipolis, France. Graphdeco Team. Supervised by **Dr George Drettakis** - george.drettakis@inria.fr **47 Months**
Received a Eurographics 2022 PhD Thesis award

2018 **Visiting Scholar - UC Berkeley's BAIR Lab**
During six weeks co-advised by Alexei A. Efros and Tinghui Zhou

2015 - 2016 **MSc in Applied Mathematics - École Normale Supérieure**
MVA (Mathematics, Vision, Machine Learning). Paris-Saclay University, France. *Summa cum laude.*

2013 - 2016 **MSc in Computer Science - Télécom Paris**
Institut Polytechnique de Paris, France. MSc in a Higher Education engineering school in France.

2011 - 2013 **Classes Préparatoires aux Grandes Écoles - Joffre High School**
Montpellier, France. Highly intensive training in mathematics, physics and theoretical computer science major.
Preparation for national entry exams to higher education engineering schools.

Interests

My research is at the cross-road of computer graphics, machine learning and computer vision. In the past I worked on novel view synthesis, neural rendering and machine learning for graphics in general. I have a specific interest and passion for image relighting. Outside of work I practice Judo and enjoy a good jamming session behind the drums.

Languages

French: Native
English: Fluent
Japanese: Scholar
Spanish: Scholar

Reviews

Siggraph - 2020-2023
Eurographics - 2020-2023
CVPR - 2022-2023
ICCV - 2021,

Service

Siggraph Asia Committee - 2023
EGSR Committee - 2023

Awards

Eurographics 2022 PhD Thesis award - link
Victoire de la Recherche - City of Nice

Coding

Pytorch/Python
Tensorflow
OpenGL
C++
Cuda

Publications

2023 **Floaters No More: Radiance Field Gradient Scaling for Improved Near-Camera Training**
Julien Philip, Valentin Deschaintre
EGSR 2023 - **gradient-scaling.github.io/**
Near-camera volumes receive more gradients during NeRF training, we rescale this gradients to remove floaters.

2023 **JoIN: Joint GANs Inversion for Intrinsic Image Decomposition**
Viraj Shah, Svetlana Lazebnik, **Julien Philip**
Under Review
We train a bank of GANs and invert them jointly to solve inverse problems.

2023 **Materialistic: Selecting Similar Materials in Images**
Prafull Sharma, **Julien Philip,** Michaël Gharbi, Bill Freeman, Fredo Durand, Valentin Deschaintre
ACM Transactions on Graphics (SIGGRAPH Conference Proceedings)
We fine-tune DINO features interpretation on synthetic images to learn material based selection in images.

2023 **PixHt-Lab: Pixel Height Based Light Effect Generation for Image Compositing**
Yichen Sheng, Jianming Zhang, **Julien Philip,** Yannick Hold-Geoffroy, Xin Sun, He Zhang, Lu Ling, Bedrich Benes
CVPR 2023 (Highlight)
We embed 2D pixels in 3D to be able to generate realistic shadows and reflections from a single image.

2022 **Point-NeRF: Point-based Neural Radiance Fields**
Qiangeng Xu, Zexiang Xu, **Julien Philip,** Sai Bi, Zhixin Shu, Kalyan Sunkavalli, Ulrich Neumann
CVPR 2022 (Oral)
We use points and kNN queries as a supporting structure to store a radiance field.

2022 **Active Exploration for Neural Global Illumination of Variable Scenes**
Stavros Diolatzis, **Julien Philip**, George Drettakis.
ACM Transactions on Graphics - 2022 - Presented at SIGGRAPH 2022
We interleave data generation and training to fit Global Illumination of a 3D scene in an MLP, using MCMC.

2022 **OutCast: Outdoor Single-image Relighting with Cast Shadows**
David Griffiths, Tobias Ritschel, **Julien Philip.**
Eurographics 2022
A 3D CNN processes shadow rays to enable single image relighting from estimated depth.

2021 **Point-Based Neural Rendering with Per-View Optimization**
Georgios Kopanas, **Julien Philip**, Thomas Leimkuehler, George Drettakis.
Computer Graphics Forum (Proceedings of the Eurographics Symposium on Rendering), 2021
A novel view synthesis method based on point splatting and probabilistic depth-test.

2021 **Free-viewpoint Indoor Neural Relighting from Multi-view Stereo**
Julien Philip, Sebastien Morgenthaler, Michael Gharbi, George Drettakis.
ACM Transactions on Graphics - 2021 - Presented at SIGGRAPH 2022
A novel view synthesis method that allows full relighting of indoor scenes using computed irradiance buffers.

2020 **Multi-view image-based editing and rendering through deep learning and optimization**
Julien Philip.
PhD Thesis

2020 **Repurposing a Relighting Network for Realistic Compositions of Captured Scenes**
Baptiste Nicolet, **Julien Philip**, George Drettakis.
ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games

2019 **Multi-View Relighting Using a Geometry-Aware Network**
Julien Philip, Michael Gharbi, Tinghui Zhou, Alexei Efros, George Drettakis.
ACM Transactions on Graphics (SIGGRAPH Conference Proceedings)
A multi view relighting method using approximate geometry and a deep CNN. Demoed at Adobe MAX 2019.

2018 **Deep Blending for Free-Viewpoint Image-Based Rendering**
Peter Hedman, **Julien Philip**, True Price, Jan-Michael Frahm, George Drettakis, Gabriel Brostow.
ACM Transactions on Graphics (SIGGRAPH Asia Conference Proceedings)
A novel-view synthesis method based on pixel selection and a learnt blending scheme.

2018 **Plane-Based Multi-View Inpainting for Image-Based Rendering in Large Scenes**
Julien Philip, George Drettakis.
ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games
We inpaint large multi-view datasets in a shared rectified 2D space using PatchMatch.