ADRIAN AZZARELLI

PhD, MEng

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My research involves designing algorithms and tools that push the boundaries of machine learning innovation for filmmaking applications. This focuses on differentiable and continuous 3-D representations with specializations in dynamic and re-lightable 3-D objects and scenes. Moving forward, my ambition is to support the creative industry with my technical skills in computer vision. Hopefully this aligns with your ambitions, so that together we can raise the bar of creative capabilities for future generations.

Languages	English, French	**Systems**	Linux, SLURM, Git	**Specializations**	3-D Reconstruction
Software	Blender, Unity	**Programs**	Python, C, C#, C++, Matlab		Gaussian Splatting (GS)
	FFmpeg, COLMAP	**Libraries**	PyTorch, Optix, Cupy		Virtual Production (VP)

RESEARCH

Aug. 2025 - Jan. 2026 LuxAeterna & MyWorld

VSR: Virtual studio 3D reconstruction and relighting with real in-camera image-based relighting
(on-going) || `https://interims-git.github.io/`
Reconstructing and relighting 3D-GS content captured using a VP stage. Essentially simulates VP footage with 3D-GS and provides fully-configurable LED walls and lighting. Tools implemented for rendering AOVs, controlling photorealistic IBL settings and geometry editing for the VP stage.

Jan. 2025 - Aug. 2025 MyWorld

Splatography: Sparse multi-view dynamic Gaussian Splatting for filmmaking challenges
International Conference on 3-D Vision 2026 || `https://bit.ly/49tc066`
Reconstructing dynamic 3D-GS with sparse multi-view cameras on entertainment datasets. Naturally segments foreground and backgrounds and trains separate models to prioritize higher quality results in foreground during training. Implemented GS-based audio-visual VFX (bloom, pulse, etc.) to showcase results.

June 2024 - June 2025 Condense Reality & MyWorld

ViVo: A dataset for human volumetric video reconstruction and compression
Special Issue on Volumetric Video and Compression, T-CSVT, IEEE 2026 || `https://bit.ly/492T8vE`
Produced a multi-view video dataset for volumetric video entertainment. Responsibilities include pre-production planning, participant recruitment, directing, post-production, and data processing. Developed a GUI for handling multi-view RGB and point clouds, and a GUI for producing masks with SAM2.

Sep. 2022 - Dec. 2024 MyWorld

Intelligent Cinematography: A review of AI research for cinematographic production
Artificial Intelligence Review, Springer Nature
The first literature review of AI research for liv-action production (∼40 pages). Discussions on current and future AI research for general, virtual, live and aerial productions. Topics include NeRF, GS, Diffusion, LLMs, zero-shot models and more.

WORK EXPERIENCE

Jun., 2019 - Present

Engineering Consultant @ AB5Consulting
Consult on embedded system design, wireless network architectures and computer vision applications for agri-tech in low-income countries. I also review policy and budget documents.

July 2020 - Nov. 2020

Research Internship @ Lurtis Rules
Researched multi-objective reward functions for genetic algorithms. This optimizes wireless sensor placement for irregularly shaped agricultural fields in 2-D.

EDUCATION

Sep., 2022 - Mar. 2026

Intelligent Cinematography, PhD @ University of Bristol, UK
Funded by MyWorld and UKRI || Supervised by David Bull and Pui Anantrasirichai (see research above)

Sep., 2018 - Mar. 2022

Electronic Engineering with AI, MEng (First Class) @ University of Southampton, UK
Thesis supervised by Mark Weal and given the title of "award worthy" (see personal website)

Relevant Modules (all graded First Class)
Advanced Programming (C++), Robotic Systems, Image Processing (MatLab), Numerical Methods, Mathematical Optimization, Reinforcement & Online Learning, Engineering Management & Law

PERSONAL PROJECTS

Sep., 2025 - Present	**Designing Sewing Patterns with Dynamic Gaussian Splatting** Developed a dynamic GS pipeline that reconstructs a 3D human avatar from a single fixed camera and estimates body measurements - difficult to do without a tailor. Implemented GS-based tools like Blender's grease pencil, which also extracts 2-D patterns so that users can design body-fit patterns for fashion design.
Jan. 2025 - June 2025	**Reverse Engineering ".procreate" files with Neural Networks (for Animation)** (With permission) Hacked the procreate (bz4 encoding) file format using a CNN/UNet image-decoding pipeline and created an animation tool that extracts layers and layer-rules for animation. This can be rendered out-of-procreate without their proprietary rendering algorithm. Tested with ClipStudioPaint rendering and Unity's URP.

VOLUNTEERING & AWARDS

Years 2020/2	Student Faculty President @ University of Southampton
Years 2020/1	Head of the ECS Mentoring Scheme @ University of Southampton
Year 2021	Biggest Impact @ University of Southampton, ECS Student Society
Year 2022	Biggest Impact @ University of Southampton, ECS Student Society