Jack Saunders

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EDUCATION

University of Bath – ART AI CDT **Sept 2019 - Mar 2025**

PhD, Computer Science *Bath*

- I have defended my PhD investigating the interaction of style and speech in facial animation. My work primarily focuses on capturing and reproducing style in 2D and 3D facial Avatars.
- The work uses differentiable rendering, neural rendering (neural textures, NeRFs, Gaussian Splatting), Generative AI (diffusion models, transformers, GANs), inverse rendering, multimodal AI (specifically audio-visual) and many other state-of-the-art deep learning methodologies.
- Obtained a Master's with Distinction, served on the Centre's Industry board, organised & chaired a conference.

University of Southampton **Sept 2016 - May 2019**

BSc. Mathematics, First Class Honors *Southampton*

- ET Davis Prize for highest average grade in pure mathematics, Dean's List 2017, 2018 & 2019
- Inter-departmental football, rugby, touch rugby

WORK EXPERIENCE

Tavus **Feb. 2025 - Present**

Senior Research Scientist *London Hybrid, UK*

- Worked on Phoenix-4 our animation and rendering model for realtime video generation of avatars. This work used Gaussian Splatting, Flow Matching and GANs. My work primarily focused on how to improve the expressiveness of the Avatars, making a novel implicit Gaussian Avatar model and improving our flow matching for a model that can now show emotions, microexpressions and shows at 25% increase in lip sync metrics vs Phoenix-3.
- I now lead a small team looking to explore video diffusion models as an alternative. This involves looking at improving identity stability as well as techniques for auto-regressive models that are realtime capable (forcing methods, distillation, quantization etc etc).
- I also run a significant portion of the hiring process, leading most technical interviews, supervising intern projects and mentoring.

RealSync AI **Apr. 2024 - Present**

Founder and Freelance Consultant *Chippenham, UK*

- I founded RealSync to provide consultancy and coding services for Avatar companies. I have helped several clients build prototypes that are now in production with tens to hundreds of thousands of users.

Microsoft **Jun. 2024 – Sept. 2024**

AI Research Science Intern *Redmond, WA, USA*

- Built a System for creating real-time, animatable, photorealistic Avatars from a single image or short video using Gaussian Splatting and Synthetic data.
- Led a research project with more than 10 members, including research scientists and engineers, and collaborated with designers, PMs and software engineers to build a working prototype.
- This work led to a CVPR paper, and we have filed a patent.
- I also assisted another intern's project on using large language models (LLMs) to interact with scene graphs and perform spatial reasoning. This work has led to a filed patent, and the paper is under review.

DeepReel **Jun. 2022 – Apr. 2024**

AI Scientist *London - Remote*

- DeepReel is an AI-driven, digital human company producing photorealistic custom avatars with text-to-avatar capabilities for marketing.
- As an early-stage employee, I proposed the pipeline of our prototype product using cutting-edge research methodology. I also proposed and won grant funding for an additional project improving our models.
- Implemented 3D reconstruction, Neural Rendering, transformer, and CNN-based models in Pytorch.

Epic Games **Nov. 2021 – May 2022**

Research Intern *Manchester - Remote*

- Worked on a novel style transfer algorithm that enabled a change in emotion for MetaHuman characters, presented at FMX 2022.
- Assisted in writing code for various elements of the Horizon 2020 project PRESENT.

PUBLICATIONS

- **GASP: Gaussian Avatars with Synthetic Priors. Saunders, Jack** and Hewitt, Charlie and Jian, Yanan and Kowalski, Marek and Baltrusaitis, Tadas and Chen, Yiye and Cosker, Darren and Estellers, Virginia and Gyde, Nicholas and Namboodiri, Vinay P. and Lundell, Benjamin E. CVPR 2025
- **READ Avatars: Realistic Emotion-controllable Audio Driven Avatars**. **Saunders, Jack** & Namboodiri Vinay. BMVC 2023 (Oral).
- **Dubbing for Extras: High-Quality Neural Rendering for Data Sparse Visual Dubbing. Saunders, Jack** & Namboodiri Vinay. To appear in BMVC 2025.
- **FACTS: Facial Animation Creation Using the Transfer of Styles**. Saunders, Jack; Caulkin, Steven; Namboodiri Vinay. Eurographics 2024
- **TalkLoRA: Low-Rank Adaptation for Speech-Driven Animation.** Saunders, Jack & Namboodiri Vinay. BMVC 2024
- **A schema-guided reason-while-retrieve framework for reasoning on scene graphs with large-language-models (llms):** Chen Yiye; Sawhney Harpreet; Gydé, Nicholas; Jian, Yanan; **Saunders, Jack;** Vela, Patricio; Lundell, Ben. ICLR 2026

SKILLS & INTERESTS

- **Skills:** Python, Pytorch, Neural Rendering (Neural Textures, Gaussian Splatting, NeRF), Generative AI (Transformers, GANs, Diffusion Models), Inverse Rendering, Optimisation, Research, Paper Writing, Grant Writing
- **Interests:** Football/Soccer, Rugby, Running, Gardening, Cooking

REVIEWING

- CVPR25, ICCV25, BMVC23, BMVC24 (Outstanding Reviewer), ECCV24, NeurIPS24, NeurIPS25, ICLR25