

WILL ROWAN

University of York
Dept. of Computer Science
Deramore Lane, Heslington
YO10 5GH

wjr508@york.ac.uk

RESEARCH INTERESTS

Modelling, generation, and 3D reconstruction of the human face using deep learning. Topics of interest include multi-modal input and output for reconstruction, parts-based shape completion, and synthetic dataset generation using conditioned generative models.

EDUCATION

University of York	York, UK
PhD Computer Science	Expected June 2024
<ul style="list-style-type: none">Fields: Computer Vision, Machine Learning, Statistical Shape Modelling.Advisors: Prof. Nick Pears, Prof. Andrew Keeling, and Dr. Patrik Huber.	
MSc Advanced Computer Science , Distinction (84%)	2019 - 2020
<ul style="list-style-type: none">Thesis: The Effect of Temporal Dependency on Deepfake DetectionAdvisor: Prof. Nick Pears.	
BEng Computer Science , First with Distinction (85%)	2016 - 2019
<ul style="list-style-type: none">Thesis: Deep Learning for Gaze EstimationAdvisor: Prof. Nick Pears.	

HONOURS AND AWARDS

Best Presentation Award, Runner-Up. ReproduceCVPR Workshop, FAU, Germany	2023
Best Project Award, Runner-Up. ReproduceCVPR Workshop, FAU, Germany	2023
Basecamp Artistic Residency Selection (200 globally), Locarno Film Festival Switzerland	2023
Far East Film Festival Campus Selection (10 out of Europe & Asia)	2023
Engineering and Physical Sciences Research Council Doctoral Scholarship	2020
Writer of the Year (1 out of 20,000), University of York	2020
Highest-marked dissertation (1 out of 150), University of York	2019
IBM Entrance Scholarship (3 out of 150), University of York	2016

RESEARCH AND TECHNICAL EXPERIENCE

University of York	York, UK
PhD Researcher	2020 - Present
<ul style="list-style-type: none">Shape-consistent text-guided image generation from generative 3D head models. Developed the largest available dataset for 3D face reconstruction, using conditioned Stable Diffusion to produce shape-consistent photorealistic images from 3D models of the human face.Shared latent space for text, images, and 3D parameterised heads. Presented the first 3D morphable modelling approach, whereby 3D face shape can be directly and completely defined using a textual prompt.Parts-based shape completion of the human head. Engineered novel methods for 3D facial reconstruction using partially observable data, enabling personalised implant design for post-operative patients, and facilitating improved patient-specific medical interventions.	
University of York	York, UK
Master's Researcher	2020
<ul style="list-style-type: none">Classification of deepfake detection systems. Proposed a framework for classifying detection methods by use of temporal information and type of feature extraction. Identified a statistically significant improvement in accuracy for detection systems including temporal information.Quantifying sources of bias in image-based generative methods. Proposed a foundational method for mathematically quantifying racial bias in early deepfake generation methods.	

University of York
Undergraduate Researcher

York, UK
2018 - 2019

- Deep learning solutions for real-time unconstrained gaze estimation. Proposed new deep learning architectures for gaze estimation, evaluating these for real-time performance.

PROFESSIONAL & LEADERSHIP EXPERIENCE

York Vision (York's Tabloid Newspaper)
Editor

York, UK
2021 - 2022

- Led a team of 30 section editors through weekly meetings, developing pitches, editing pieces for online and print publication, and providing detailed feedback.
- Produced five 32-page print editions, including a 16-page arts and culture pull out, alongside investigative news pieces that drove institutional change at the university.
- Earned Special Mention for Outstanding Commitment to Student Journalism in the North of England by the Student Publication National Association (2022) for work as Editor.

York Student Cinema
Head Film Programmer

York, UK
2021 - 2022

- Selected, ordered, and collected cinema packages from film distributors using a £12,000 annual budget.
- Coordinated a team of projectionists, preparing all films ahead of screenings.
- Liaised with distributors and delivery specialists to procure specialist films and ensure timely delivery.
- Analysed revenue from screenings and events to inform future programming strategy.

TEACHING & ACADEMIC EXPERIENCE

University of York
Department Ambassador

York, UK
2019 - 2023

- Organised tours of the department for prospective research students.
- Acted as a point-of-contact for students throughout the application process.

Project Supervisor

2021-2022

- Defined a final-year project on 3D shape alignment methods.
- Led weekly meetings with the selected student, providing targeted support and giving them a wider appreciation for computer vision research.

Graduate Teaching Assistant, Multi-Agent Interaction

2020 - 2021

- Led weekly seminar classes in multi-agent interaction and reinforcement learning for 40 students.
- Tailored problem classes to focus on common challenge areas identified by students.
- Reported progress of students to the module leader and informed future module content.

SKILLS & INTERESTS

Deep Learning: PyTorch, PyTorch 3D, Keras, Transformers, Diffusers

Computer Vision: Skimage, OpenCV

Data Science: NumPy, Pandas, SciPy, sklearn, seaborn

Software: Git, Python, MATLAB, L^AT_EX, COLMAP, MeshLab

Interests: Frequent contributor as a freelance film journalist to platforms such as BBC Radio York, *Filmhounds Magazine*, and *Taiwan News*. Ex-editor of *The Lemon Press*, the UK's largest volunteer-run satire magazine.

PUBLICATIONS

In Preparation

Will Rowan, Patrik Huber, Nick Pears, and Andrew Keeling
"3D Statistical Shape Completion from In-the-Wild Images"

Will Rowan, Patrik Huber, Nick Pears, and Andrew Keeling
“Optimally Combined 3D Reconstruction: Calculating Lower Error Bounds”

In Submission

Will Rowan, Patrik Huber, Nick Pears, and Andrew Keeling
“Fake It Without Making It: Conditioned Face Generation for Accurate 3D Face Reconstruction”
Preprint. arXiv:2307.13639 (2023).

Will Rowan, Patrik Huber, Nick Pears, and Andrew Keeling
“How Many OptiFaces? A New Evaluation Metric for 3D Face Reconstruction”

Conferences

Will Rowan, Patrik Huber, Nick Pears, and Andrew Keeling
“Text2Face: 3D Morphable Faces from Text”
International Conference on Learning Representations (2023).

Talks

Will Rowan
“How Many OptiFaces? A New Evaluation Metric for 3D Face Reconstruction”
ReproduceCVPR Workshop, FAU, December 2023.

Will Rowan
“Conditioned Face Generation for Accurate 3D Face Reconstruction”
British Machine Vision Conference Doctoral Consortium, November 2023.

Theses

Will Rowan
“The Effectiveness of Temporal Dependency in Deepfake Video Detection”
M.Sc. Thesis. University of York, October 2020.

Will Rowan
“Gaze Estimation Using Deep Learning”
Bachelor Thesis. University of York, June 2019.

REFEREES

References available upon request.