Robbie Hamilton

Bristol, United Kingdom

linkedin.com/in/robbie-hamilton github.com/RobHam99 robbie.hamilton@bristol.ac.uk

Publications

- Hamilton, R., Zhang, F., Bull, D. (2027). *HiVE-VQA: Hierarchical Interaction via Volumetric Embedding for Video Quality Assessment*. IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2027.
- Gao et al. (incl. Hamilton, R.) (2026). *Advances in Neural Video Compression: A Review and Benchmarking*. Preprints. https://doi.org/10.20944/preprints202604.0035.v1

Experience

University of Bristol – PhD (Computer Science, EPSRC DTP Scholarship) September 2024 – September 2028 | Bristol, UK
Deep Learning Methodologies for Video Quality Assessment – Supervised by Prof. David Bull.

- **HiVE-VQA** (WACV 2027): NR-VQA model with JEPA pre-trained encoder and hierarchical volumetric quality head. Benchmarked model against 17 state-of-the-art metrics, with our model outperforming all 17 metrics across 4 datasets. Trained with distributed HPC setup across 8 GPUs.
- **Representational analysis of ViTs** (in preparation, first author): analysing the location and construction of distortion signal within pre-trained ViTs. Using this information to better inform the design of video quality metrics.
- **State-space models for NR-VQA:** Designed a pre-training dataset of 13,000 video patches with VMAF pseudo-labels. Designed and trained a Mamba (SSM)-based no-reference video quality metric and benchmarked against state-of-the-art.
- **Amazon Prime Video UK collaboration**: presented research monthly to industrial research scientists over 12 months shaping project direction.

Curious Minds Science Ltd – Co-Owner & Tech Lead (Part-Time) *August 2023 – February 2026* | Remote

- Led online strategy, contributing to 112% revenue growth over three years.
- Published PyVeeqo, an open-source Python package for the Veeqo inventory API. Built automated profit-analysis reporting on top of PyVeeqo.

MarkerBot (University of Bristol) – Software Developer (Part-Time) *March 2025 – January 2026* | Bristol, UK

- Designed and engineered backend logic in Python (SQLAlchemy) for university marking allocation system.
- Built a Power Apps interface for unit directors to oversee marking allocation.

Carnegie Trust, CNQO Group, University of Strathclyde – Research Intern *June 2022 – September 2022* | Glasgow, UK

- Developed and tested neural network optimizers for many-body quantum systems using Python.
- Trained Restricted Boltzmann Machines to estimate the ground states of the Transverse-Field Ising model.

Education

University of Strathclyde – Integrated Master of Physics, First Class Honours *2017 – 2023* | Glasgow, UK

- Dean's List: awarded to select group of students for exceptional performance in final examinations.
- Modules: Machine Learning (93%), Mathematical Physics (88%), Computational Physics (97%), Statistical Physics (95%).
- MPhys thesis: Numerical and analytical simulation of open quantum systems in non-Markovian environments.

Technical Skills & Awards

- **Deep Learning:** PyTorch, Vision Transformers, Computer Vision, scikit-learn, MLLMs, Contrastive Learning, Fine-Tuning, Distributed Training, Knowledge Distillation, Model Efficiency Optimisation.
- **Software & DevOps:** OpenCV, FFmpeg, Python, JavaScript, React, SQL, Linux, Bash, Docker, Git, High-Performance Computing (SLURM), tmux, crontab, Unit Testing.
- **Awards:** EPSRC DTP scholarship, Carnegie Vacation scholarship, Bristol PLUS award.