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EDUCATION

- **University College London** 09.2022 – 09.2023
  - Expected Distinction, MSc. in Computer Graphics, Vision and Imaging
  - Supervisor: Prof. Niloy J. Mitra
  - Thesis (**honourable mention** - top 3 in 30 students of the MSc programme): InstantNeRF2NeRF: edit 3D neural radiance field scene in seconds. [link].
  - Relevant modules: Computer Graphics (90%), Image Processing (93%), Machine Learning (ML) for Visual Computing (74%), Acquisition and Processing of 3D Geometry (79%), Inverse Problems in Imaging (80%), Machine Vision (73%), Virtual Environment (80%), and ML in Medical Image (76%).
  - Image Processing oral project (93%): implemented a real-time seamless cloning based on the Poisson image editing and proposed a weighted texture flattening algorithm.
  - Computer Graphics project (93%): path tracking using multiple importance sampling and motion tracking.
  - ML for Visual Computing project (89%): implemented and explored the gradient-based neural network attack approach, backpropagation in convolutional neural network matrix form, and various unsupervised generative models on the CelebA-HQ dataset.
  - Seminar review project (88%): mixed reality remote collaboration with eye gaze and hand gestures.
  - Acquisition and Processing of 3D Geometry projects (85%): implemented and explored iterative closest point algorithm with point-to-point, and point-to-plane in different subsampling strategies, angle initialisation and global registration effects. mesh smoothing with spectral analysis and explicit & implicit diffusion flow-based methods.
  - Seminar essay (87%): The main issues involved in creating accurate hands in virtual reality [pdf].
- **The University of Birmingham** 09.2021 – 09.2022
  - Distinction. MSc. in Artificial Intelligence and Machine Learning.
  - Relevant modules: Neural Computation (84%), Mathematical Foundations of AI & ML (83%).
  - Seminar review project (90%): deep learning-based 3D human pose estimation from images/videos.
  - Neural Computation project (80%): semantic segmentation of cardiac magnetic resonance (CMR) images.
  - Degree project: a region of interest (ROI) anomaly detection method in chest x-ray screening based on adversarial screening: a novel ROI anomaly detection algorithm trained by normal data only. Proposed a novel loss function, making the algorithm more focused on pathological information and more robust to noise [pdf].
  - University of Birmingham CVPR Workshop 2022: presented papers and ideas relevant to the final project.
- **The University of Essex** 11.2017 – 06.2021
  - BSc. in Electronic System Engineering. Class I in the final year, overall Class II.1
  - Final year project: Image classification in deep learning [pdf]
  - Reviewed several significant modern convolutional neural networks. Produced a comprehensive empirical analysis on the effectiveness of optimisers, data augmentation, dropout, and batch normalisation.
  - Created a GUI to visually compare results from different CNNs and classify photos in real-time.
- **Northwest University** 09.2017 – 07.2021
  - B.Eng. in Electronic Information Science and Technology
  - 79% in the first three years, first class in the last year of The University of Essex. First-class scholarship.

PUBLICATION

- Wang, B., Dutt, N.S. and Mitra, N.J., 2023. ProteusNeRF: Fast Lightweight NeRF Editing using 3D-Aware Image Context. *arXiv preprint arXiv:2310.09965*. [project webpage].

RESEARCH EXPERIENCES

- **Research Assistant** at Max Planck UCL Centre, with Prof. Ray Dolan. 05.2023–pres.
  Work on a joint project with UCL Cosmology department to explore how humans think physics based on machine learning methods.

PROGRAMMING CONTESTS

- **Silver Medallist**, ACM-International Collegiate Programming Contest Asia-East Continent Final [pdf] 2019
  - Top 2% among > 3000 teams in ACM-ICPC East Asia
  - Obtained 4 silver medals in ACM-ICPC and CCPC regional contest [2, 3, 4]
- **Fifth Place & Gold Medallist**, Provincial Collegiate Programming Contest of China [pdf] 2021
  - Coach and competition captain. 5th place out of nearly 100 teams.

TEACHING EXPERIENCES

- **Instructor** on International Olympiad in Informatics training camps 12.2019 – 10.2021
  - Official instructor at Northwest University, China; freelancer at High School of RUC (top school in Beijing)
  - Taught >200 students, >10 won 1st prizes in National Olympiad in Informatics in Provinces (NOIP).
  - Taught proof of algorithms and competition-level exercises in graph theory, combinatorial mathematics, game theory, dynamic programming and data structures.
  - Among the 6 students at High School of Renmin University, 4 students won the first prize in NOIP, 3 won gold, silver and bronze medals in the Asia-Pacific Informatics Olympiad 2020 & 2021, and 2 went into the China national junior Olympiad team. Lixi Ye won second place in the NOIP2021 junior ranking nationwide.
- **Student Coach** of Algorithm Society, Northwest University 09.2019–07.2021

  Organised International Collegiate Programming Contest programming training for the university team.
- **Video Blogger** on Bilibili **(a YouTube-like Chinese video-sharing website)** 01.2018 – present
  - Share tutorial videos of algorithms in Machine Learning & Computing Theory. 200+ videos & 2,000+ fans

SCHOLARSHIPS & AWARDS

- **Top 29th**, Pawpularity Contest, Kaggle 2022
- **Excellent Minister** of the Student Union, Northwest University 2019
- **National prize** for Voluntary Work in Rural Education, Northwest 2018
- **School-level First Prize**, China College Entrepreneurship Competition 2018
- **School-level Third Prize**, China College 'Internet+' Innovation and Entrepreneurship Competition 2018