Gavin Yue

London zhilinggavin@gmail.com +44 7397682706 LinkedIn MyWebsite

PROFESSIONAL SUMMARY

ML Researcher for healthcare with 2+ years in **Deep Learning, Computer Vision and 3D Reconstruction**, holding **2 AI publications** in **medical** image analysis. Strong expertise in **Generative AI**, **Image Processing and Analysis**, with hands-on industry experience in **MLOps** and cloud AI deployment (**AWS**). Proficient in Image AI architectures, including **Vision Transformers, CNNs, RNNs, and GANs**. Experienced in **stereo vision** and **SALM**. Collaborated with **hospitals** on **AI-driven 2D/3D medical image analysis**. Consistently **top-ranked in academics**, with a proven ability to solve complex challenges.

EDUCATION

Imperial College London, UK *Sept 2023 – Oct 2024*
*MRes in Medical Robotics and Image Guided Intervention (**Distinction**)*

- Research Focus: Deep Learning, Computer Vision, **2D/3D medical Image Processing & Analysis**
- **2 publications in Medical Image AI**; Invited presentation at *Hamlyn Symposium on Medical Robotics*
- Key Skills: Medical & Surgical image analysis and Medical Robotics in **Minimum Invasive Surgery**

University of Birmingham, UK *Sept 2021 – July 2023*
*BEng in Mechanical Engineering (**1st Class Honours**)*

- Thesis (82%): **Cloud AI solutions** for **industry robots** using AWS and LLMs
- Key Skills: Engineering Mathematics (92%), **robotics**, cross-disciplinary collaboration

Wuhan University of Technology, China *Sept 2018 – July 2021*
*BEng in Mechanical Engineering (**1st Class Equivalent**)*

- **Awards:** Excellent Student Leader award; Academic Excellence Scholarship; Chair of Class Committee
- Mathematics - 95%, Microprocessor Programming (C/C++) - 91%, Innovative Design of Robots - 98.8%

TECHNICAL SKILLS

Programming: Python, C/C++, MATLAB, Linux (HPC, Bash)

AI & Library: PyTorch, TensorFlow, OpenCV, Scikit-Learn, **CNNs, GANs, Diffusion, Transformers**

Vision & Image: Enhancement, Denoising, Segmentation, Motion Detection, **Stereo Vision, SLAM**

Medical Vision AI Research Experience

Graduate Researcher, Imperial College London *Oct 2024 - Current*
Skills: Diffusion Models, 3D Images, Weakly Supervised Learning

- Developing a generative AI-based weakly supervised **3D segmentation model** for automated lung lesion detection, focusing on clinical applicability
- **Benchmarking and evaluating** state-of-the-art 3D segmentation models, including VISTA-3D (NVIDIA), MedSAM2, nnU-Net, and MedNeXt, to establish robust performance baselines
- Contributing to **two forthcoming publications** focusing on GenAI approaches to medical image segmentation, highlighting semi-supervised and weakly supervised methodologies

Weakly Supervised Segmentation for Medical AI, Imperial College London *June 2024 - Nov 2024*
Skills: GenAI, Transformer, XAI

- **First author *Publication*** on weakly supervised learning for Lung Fibrosis segmentation with **state-of-art** performance and sparsest labels required (image-level label)
- **Trained and fine-tuned AI models** across Diffusion, GANs, ResNet, CNNs, Vision Transformers for medical image analysis
- Built medical image **auto-segmentation tool** for clinical quantification and diagnosis

Multimodal VLM for Clinical Diagnostics, Imperial College London *Oct 2023 - June 2024*
Skills: Vision-Language Models, GenAI, XAI

- Developed a **multimodal vision-language AI model** incorporating **generative techniques** (GAN, Diffusion) for automated **clinical report generation and diagnostics**
- Co-authored a peer-reviewed ***Publication***, presenting findings at Hamlyn Symposium to 200+ researchers.
- Designed novel **disentanglement algorithms** enabling precise, **controllable counterfactual** medical image generation for explainable AI
- Trained and Analysed generative model performance (StyleGAN, cGAN, DDIM) using quantitative metrics (PSNR, FID) on large-scale clinical datasets (100,000+ images)

Medical Robotics & Imaging, Imperial College London *Oct 2023 - Feb 2024*
Skills: 3D Imaging, Robotics, Signal Processing, Bayesian Modelling, MATLAB

- Developed a **stereo vision-based 3D reconstruction** pipeline for **surgical instrument tracking and measurement**, optimising feature matching and depth estimation to achieve 95% accuracy
- Developed and validated trajectory planning algorithms for a **6-DoF robotic arm** used in **minimally invasive surgical** simulations and real-world demonstration, achieving 1mm precision
- Designed and prototyped a **pneumatic soft robot** to enhance surgical tool handling
- Built a **Bayesian probabilistic classifier** for automated arrhythmia detection with signal processing
- Designed and analysed an Aortic Valve Stent for **minimally invasive surgical** using FEA, incorporating a VR AI-assisted positioning strategy

INDUSTRY & INTERNSHIP EXPERIENCE

Machine Learning Engineer Intern, AI Consulting Startup, UK *Feb 2025 – Present*

- Built an automated **LLM**-powered pipeline to generate **Company Insight Reports**, analysing public financial and operational data for risk and growth evaluation.
- Applied web scraping, **NER**, and **sentiment models** (e.g. BERT, LLaMA2) for **scalable trend analysis** and structured insight extraction in Excel and databases.

3D Vision & Robotics Intern, Imperial College London *June 2024 - Sept 2024*

- Developed real-time **SLAM** (ORB-SLAM2, EKF) for marine robot **localisation and mapping**
- Integrated **Stereo vision and CNNs** (StereoNet) for **3D underwater scene reconstruction**
- Built dual simulations with **ROS** and Gazebo, integrating MPC with path planning for optimised trajectory planning and obstacle avoidance

Cloud LLM Solutions for Industry Robots, University of Birmingham *July 2022 - Sept 2023*
Skills: AWS, LLM, ROS, IoT

- Developed an LLM-powered robotic assistant for industrial automation (Robotic Dog)
- Developed a **cloud framework** and a **voice-controlled AI** system using **AWS**, reducing processing latency by 40%

Machine Learning Intern, Bright Network, UK *July 2022 - July 2022*

- Developed and deployed **AI models in AWS** during Amazon-led ML workshops.
- Designed **Reinforcement Learning** navigation algorithms for autonomous systems

Research Assistant (R&D), National 719 Research Institute, China *July 2020 - Sept 2020*

- Contributed to research and evaluation of marine waste disposal technologies, authoring technical reports
- **Presented** findings to **industry stakeholders** at national exhibitions

PUBLICATIONS

Enhancing Weakly Supervised Semantic Segmentation for Fibrosis via Controllable Image Generation 2024
IEEE International Symposium on Biomedical Imaging (ISBI 2025 accepted)

Decoding Report Generators: A Cyclic Vision-Language Adapter for Counterfactual Explanations 2024
International Joint Conference on Artificial Intelligence (IJCAI 2025 accepted)