REZA KALANTAR, PhD

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OBJECTIVE

Machine Learning Researcher with 5+ years of experience in deep learning, computer vision, and medical AI. Delivered innovative models for multi-modal image registration, synthesis and segmentation, achieving up to 10x performance improvements for registration. Published 7+ peer-reviewed papers, built and deployed real-world AI models with measurable clinical impact.

SKILLS

- **Languages:** Python, C++, MATLAB, Swift, SQL
- **Machine Learning Libraries:** PyTorch, TensorFlow, Keras, Scikit-learn, Monai, Hugging Face Transformers
- **DevOps & MLOps Tools:** Docker, MLFlow, DVC
- **Cloud Platforms:** Azure, AWS
- **Data Analysis and Visualization:** Pandas, NumPy, Matplotlib, Seaborn

WORK EXPERIENCE

MVision AI London, United Kingdom
Machine Learning Researcher Dec 2023 - Present

• **Developed and optimized AI algorithms** for image segmentation and registration across multi-modal datasets, achieving a **10x speedup** without performance degradation using supervised and unsupervised models

• **Led the end-to-end development of an AI pipeline** for medical image segmentation and registration, deploying models via Docker and Azure, which facilitated real-time cloud inference in clinical settings

• **Collaborated with cross-functional teams** including clinicians, product managers, physicists, and engineers to scale the product for deployment in real clinical environments, ensuring compliance with medical standards

• My developments directly contributed to **the launch of a new product line** focused on medical image registration, expanding the company's offerings in the healthcare sector

EDUCATION

The Institute of Cancer Research, London, United Kingdom Oct 2019 – Oct 2023
PhD in Deep Learning for Medical Image Analysis

- Led research on generative image synthesis, segmentation for treatment planning and quantitative image analysis using state-of-the-art AI algorithms for pelvic cancers
- Published **7 peer-reviewed articles**, the highest among PhD peers during the program
- Presented research at **5+ international AI conferences** to technical and clinical audiences
- Collaborated with clinicians, physicists and engineers to develop and validate AI tools for potential deployment in real-world treatment workflows

PERSONAL PROJECTS

End-to-end multi-task AI product for Inter- & cross-modality image registration Dec 2023 – Present

- Led the design and development of a scalable AI pipeline for medical image registration, integrating unsupervised transformers (TransMorph) and adaptive segmentation models to enhance registration speed and accuracy
- Achieved **10x speedup** over clinical baseline methods with **>90% success rate** in challenging registration cases, deploying the models on the cloud for real-time clinical applications
- Collaborated with ML engineers, clinicians and product management teams to ensure **clinical compliance**, **implement docker-based deployment** and facilitate integration with existing company interfaces
- Contributed to the company-wide internal codebase by development of new AI tools and documentations, streamlining onboarding and cross-team developments

Adaptive AI image synthesis-segmentation framework for treatment planning Mar 2020 – Dec 2020

- **Developed** a modular AI pipeline for medical image synthesis and adaptive segmentation, integrating GANs, diffusion models, transformers and novel encoder-decoder architectures
- **Authored the first publication** on AI-driven adaptive synthetic-image assisted segmentation framework for MR-Linac systems, leading to an oral presentation at the largest radiation oncology conference (ASTRO) in San Diego
- This research resulted in **5 peer-reviewed publications** and presentations at various international conferences, contributing significantly to AI algorithms for pelvic cancer treatment
- Collaborated with expert clinicians to evaluate the AI pipeline, achieving **~99% acceptance rate** for generated adapted results in real-world treatment scenarios

Development of AI COVID-19 detector and iOS application Mar 2020 – Dec 2020

- Developed a CNN classifier using non-curated open-source chest X-ray datasets and large-scale transfer learning, achieving **>95% accuracy** in detecting COVID-19 pneumonia
- Built an iOS app integrating the trained deep learning model, enhancing accessibility for non-technical users and earning recognition from research institutes in the UK, Italy and Canada
- Co-authored a peer-reviewed paper detailing the findings, contributing to open-source COVID-19 research which resulted in **over 200 citations**

PUBLICATIONS

Domain-Adaptive and Per-Fraction Guided Deep Learning Framework for MRI-Based Segmentation of Organs at Risk in Gynecologic Cancers — Apr 2025
Advances in Radiation Oncology

MED-INPAINT: Medical Image Synthesis using Multi-Level Conditional Inpainting with a Denoising Diffusion Probabilistic Model and Adaptive Contrast Priors — Nov 2023
IEEE MedAI

Deep Learning Framework with Multi-Head Dilated Encoders for Enhanced Segmentation of Cervical Cancer on MRI — Nov 2023
Diagnostics

Non-Contrast CT Synthesis Using Patch-Based Cycle-Consistent Generative Adversarial Network (Cycle-GAN) for Radiomics and Deep Learning in the Era of COVID-19 — June 2023
Nature Scientific Reports

Automatic Segmentation of Pelvic Cancers Using Deep Learning — Oct 2021
Diagnostics

CT-Based T1-Weighted MR Image Synthesis Using UNet, UNet++ and Cycle-GAN — July 2021
Diagnostics

Deep Learning COVID-19 Detection Bias: Accuracy Through AI — Aug 2020
International Orthopedics

AWARDS & SCHOLARSHIPS

Awarded prestigious PhD studentship (**~£140,000**) by the Institute of Cancer Research (ICR) and the Royal Marsden Hospital (RMH) — Oct 2019
Funded by the National Institute of Health and Care Research (NIHR) Biomedical Research Centre

Awarded the best poster for MRes project at the Hamlyn Symposium on Medical Robotics — Sep 2019
Received from Lord Ara Darzi & Professor Guang-Zhong Yang

Received **£12,000** postgraduate scholarship from Imperial College London — Sep 2018
Hamlyn Centre for Robotics Surgery