REZA KALANTAR, Ph.D.

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Summary

Machine Learning Scientist with 5+ years of experience developing deep learning solutions for biomedical imaging and clinical AI. Ph.D. in Medical AI, with a focus on research and development of models for complex medical challenges. Experience in autoencoders, transformers, and generative models, with extensive experience in innovative design and handling complex, high-dimensional biomedical data. Skilled at translating ambiguous biomedical problems into well-defined machine learning tasks. Strong track record of deploying AI systems in real-world clinical settings, with 7+ publications and presentations at AI conferences and journals. Strong software engineering skills, collaborative research experience, and a passion for discovery in biology and drug development.

Skills

- **Languages:** Python, C++, MATLAB, Swift
- **Machine Learning Frameworks:** PyTorch, TensorFlow, Keras, MONAI, Hugging Face Transformers, Scikit-learn
- **Modeling:** Transformers, Diffusion Models, Attention Nets, GANs, VAEs, Gaussian Processes
- **DevOps & Cloud Tools:** Git, Docker, MLFlow, Azure, DVC
- **Data Handling:** Pandas, NumPy, Matplotlib, Seaborn, NIfTI, DICOM, SQL

Experience

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

- Led the design and optimization of multimodal AI pipelines for real-time image registration and segmentation
- Integrated transformers (Swin Transformers, TransMorph) and adaptive learning into scalable pipelines
- Enabled 10x speedup in clinical treatment planning workflows via cloud-based deployment (Docker, Azure)
- Collaborated across teams (physics, clinical, software) to align development with clinical constraints

Key Project: Cloud-based adaptive registration for oncology
- Built unsupervised transformer-based registration achieving >90% success in challenging real-world cases
- Enabled deployment of AI models through docker-based deployment and modular software design

The Institute of Cancer Research — London, United Kingdom
Machine Learning Scientist — Oct 2019 – Apr 2023

- Developed a novel synthesis-segmentation pipeline using GANs, diffusion models, and transformers
- Achieved >90% and 99% clinical acceptance on synthesis-guided and adapted segmentations on real-world data
- Designed generalizable multimodal segmentation framework across different pelvic cancers
- Led to 7 peer-reviewed journal papers and presentations at multiple international medical AI conferences

Key Project: Synthetic image-guided adaptive segmentation
- Research and adaptation of SOTA architectures for integrating multimodal data and resolving domain shift
- First author; presented at ASTRO and MedAI conferences; pipeline adopted in clinical evaluation studies

Education

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

Imperial College London, United Kingdom — Sep 2018 – Sep 2019
MRes in Medical Robotics & Image-Guided Interventions – GPA: 4.0

Selected Publications

Domain-Adaptive AI for Gynecologic Cancers. *Adv. Rad. Onc.*	Apr 2025
MED-INPAINT: Image Synthesis using Multi-Level Inpainting with Adaptive Priors. *IEEE MedAI*	Nov 2023
Framework with Multi-Head Dilated Encoders for Segmentation of Cervical Cancer. *Diagnostics*	Nov 2023
Non-Contrast CT Synthesis using Cycle-GAN for assessment of COVID-19. *Nature Sci. Rep.*	June 2023

Awards and Scholarships

Prestigious Ph.D. studentship (~**£140,000**) by the Institute of Cancer Research (ICR)	Apr 2025
Best poster award at Hamlyn Symposium on Medical Robotics	Nov 2023
Received **£12,000** postgraduate scholarship from Imperial College London	Nov 2023