REZA KALANTAR, Ph.D.

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Summary

Research Scientist with 6+ years of experience advancing foundational AI via deep learning, generative modeling, and large-scale experimentation across vision and multimodal systems. Ph.D. in AI with a proven track record of incubating novel architectures, scaling models across distributed systems, and translating exploratory research into high-impact applications. Skilled in building vision and multimodal models, with a deep interest in optimization techniques, generalist AI, and AGI-aligned research. Passionate about pushing the frontiers of AI and collaborating across disciplines to drive innovation at scale.

Skills

- **Languages & Tools:** Python, C++, Shell, Git, Docker, Bash, MATLAB, Swift
- **Deep Learning Frameworks:** PyTorch, Hugging Face Transformers, TensorFlow, OpenCV, Deepspeed
- **Foundation Models:** Vision Transformers (ViTs, Swin, TransMorph), Diffusion Models, Autoencoders, GANs, VAEs, Attention Mechanisms, Contrastive & Self-Supervised Learning (SimCLR, BYOL)
- **Distributed and Scalable Systems:** Multi-GPU training (PyTorch DDP, Deepspeed), Model parallelism, Azure, DVC
- **Data Engineering & Ops:** Scalable data pipelines for ingestion, preprocessing, and augmentation of large datasets
- **Research & Applications:** Foundation models, generalist model development, optimization techniques, inverse problems, multimodal learning, incubation of real-world AI applications

Experience

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

• Incubated foundation models (Swin, TransMorph) for unsupervised registration, boosting alignment accuracy across multimodal datasets.
• Developed and integrated transformer models for unsupervised and adaptive learning, achieving >90% accuracy.
• Created adaptive vision transformers for robust generalization across diverse complex domains.
• Delivered 10x workflow speedup through cloud deployment (Docker, Azure) and GPU acceleration.
• Collaborated cross-functionally to meet clinical and operational performance goals.

Key Project: Foundation Pipeline Incubation for Real-Time Multimodal AI Registration
• Researched and prototyped foundational vision models for real-time cancer treatment planning.
• Built modular AI pipelines for scalable segmentation and alignment on large datasets.

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

• Developed a foundational multimodal pipeline using GANs, diffusion models, and transformers for pelvic cancers.
• Achieved 90–99% clinical acceptance on synthesis-guided and adapted segmentations with real-world data.
• Led 7+ peer-reviewed publications; presented at conferences such as ASTRO, MedAI, MIDL, and ISMRM.
• Designed synthetic data strategies to enhance segmentation adaptation and generalization.

Key Project: Multimodal Foundation Pipeline for Synthesis-Segmentation
• Deployed vision transformers and generative models to improve segmentation in data-scarce domains.
• Benchmarked model performance on multimodal datasets, achieving >90% clinical acceptance.

Selected Projects

- Multitask AI pipeline for innovative cancer treatment planning: Developed novel clinical product for registration.
- Segment Anything Model (SAM) for lung segmentation: Adapted and incubated foundation models for medical use.
- COVID-19 AI Detector & iOS App: Large scale transfer learning and AI development from idea to endpoint.

Education

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

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

Awards and Scholarships

- Prestigious Ph.D. studentship (**~£140,000**) from the Institute of Cancer Research — Oct 2019
- **£12,000** postgraduate scholarship from Imperial College London — Sep 2018