

# Machine Learning Scientist: Virtual Patient Populations

Reference: ADS-MLS-0424

## About the Company:

At **adsilico**, we're not just building models, we're shaping the future of healthcare. We're on a mission to redefine medical device innovation, powered by cutting edge *in silico* technologies that get *better* devices to patients *faster* and *cheaper* than ever before. We're pioneering techniques for generating virtual patients with unparalleled fidelity and diversity, and for deploying these in groundbreaking *in silico* trials. We are passionate for technology that impacts lives.

Want to do work with purpose? At **adsilico**, you will create technology that accelerates the creation of new medical devices, enables radical innovation with direct benefits to patients, yet lowers the cost. You will help to eliminate the use of animals in medical device testing yet reduce the patient harms that stem from undertesting of new products. You will advance the state-of-the-art yet keep patient impact squarely in sight.

Our team is diverse and proud of it; we know we are stronger for it. We are supportive and inclusive. We value excellence and ethics in equal measure.

We're backed by a motivated and experienced investor consortium, a world-class advisory board of experienced MedTech entrepreneurs, scientists, and regulatory specialists, and competitive funding from Innovate UK.

## About the Job:

As a machine learning scientist at **adsilico** you will be at the forefront of our virtual patients technology development. You will play a pivotal role in advancing our core technology for multi-modal medical data analysis and 3D Generative AI. As a core member of the virtual populations team, you will design and implement efficient workflows for creating *virtual twin* and *virtual chimera* (aka synthetic patient) populations of patient anatomy, physiology, and pathology. You will have a passion for impacting healthcare through commercial translation of state-of-the-art developments in AI and the ability to pioneer new technologies for 3D generative AI.

## Responsibilities:

- Lead development of machine/deep learning algorithms for: medical image analysis (semantic segmentation, landmark localisation, object detection), 3D generative AI, and integrated analysis of multi-modal medical data.
- Lead development of workflows for end-to-end creation of virtual twin and virtual chimera patient populations.
- Work towards long-term ambitious research & development goals in 3D generative AI, while meeting intermediate product development milestones.
- Contribute to development of core software libraries and documentation with input from other members of the virtual populations team.
- Contribute to design of quality management processes for developed software with input from other members of the virtual populations team, conforming with ISO 13485 and ISO 27001.
- Implement good documentation practices based on quality management processes.
- Consult and collaborate with the simulations team to address technical requirements and issues and develop workflows for orchestrating *in silico* trials of medical devices.

- Communicate technical concepts to both expert and non-expert internal and external stakeholders.

#### Minimum qualifications & experience:

- Ph.D. in a relevant field and experience in developing machine/deep learning algorithms for: semantic segmentation/object detection/landmark localisation in medical images, generative models (e.g. VAEs, GANs, normalising flows, diffusion models, etc.) for image synthesis and/or 3D generative AI for parametric representations of anatomical structures (e.g. point clouds, surface meshes, etc.).
- Proficiency in Python programming and use of established libraries for machine/deep learning (e.g. PyTorch/Tensorflow, PyTorch-Geometric) and scientific software packages (e.g. SciPy, NumPy, ITK/VTK, etc.).
- Evidence of ability to create new methodologies in the mentioned technical areas. Evidence could, for example, take the form of first author publications in high-impact peer-reviewed journals (e.g. Nature Machine Intelligence, IEEE Transactions in Pattern Analysis and Machine Intelligence, Medical Image Analysis, IEEE Transactions in Medical Imaging, etc.) or top-tier peer-reviewed conferences in AI and/or medical image computing (e.g. MICCAI, IPMI, CVPR, NeurIPS, ICML, ICCV, ECCV, etc.).
- Experience of following best practices for software development (e.g. use of Git for code version control).
- Experience of communicating research to expert and non-expert audiences.

#### Preferred qualifications & experience:

- Proven work experience in university or industry labs in a lead role with primary emphasis on AI research for medical image computing.
- Expert in geometric deep learning.
- Knowledge of Bayesian approaches for learning representations from multi-modal data (images/videos, tabular data, text).
- Experience of developing image analysis and computational modelling and simulation workflows in the medical devices industry.
- Experience of working in quality-controlled environments.

#### Why Join Us?

- **Impact:** Contribute to groundbreaking advances in *in silico* trials that will reshape the medical devices industry and bring innovations to patients faster and more safely than ever before.
- **Entrepreneurial Environment:** Be part of a cutting-edge start-up that values creativity and agility; make your mark.
- **Research-Driven Innovation:** Work with a world-class scientific team to shape products and services based on cutting-edge research.
- **Upskilling:** Get exposure to and training in highly valued processes, such as design-controlled software development.
- **Location:** Take advantage of our modern and well positioned office, balanced with hybrid working opportunities.
- **Compensation:** Receive a highly competitive package.

**If you are interested in joining the team, get in touch! Please send your CV and cover letter to:**

[jobs@adsilico.uk](mailto:jobs@adsilico.uk). In your cover letter briefly describe how your experience, knowledge and skills meet the job requirements.