

## PROJECT DETAILS

Project Title:

**Machine Learning Approaches to Map and Predict Structural Diseases in DXA Imaging**

Project Summary: aims, significance, expected outcomes and potential research impact.

DXA scanning technology stands out for its minimal radiation exposure, positioning it as a prime candidate for frequent, early-stage screening of cardiovascular diseases and other conditions by identifying structural irregularities. Despite this, DXA scans are often plagued by issues of noise and low resolution. The goal of this project is to create advanced explainable medical image processing and Machine Learning algorithms capable of detecting and localising these irregularities. Embodying a truly multidisciplinary endeavour, this work synthesizes elements of Artificial Intelligence, Machine Learning, Cardiometabolic Health, and Mineralisation Disorders. Our team is able to corroborate the research findings and algorithm effectiveness through population-wide studies.

Preferred applicant skill set, describe the capabilities of the HDR applicant:

We are looking for a PhD candidate with a strong academic background in fields such as Computer Science or Engineering. They should excel in programming languages like Python and possess a solid grasp of mathematics, particularly in statistics. Prior research experience and a broad understanding of artificial intelligence and machine learning techniques are essential. The candidate should demonstrate critical thinking, creativity, and effective communication skills and have an interest in medical image processing. Collaborative spirit and adaptability to new technologies are crucial and candidates must have initiative and a passion for advancing knowledge in artificial intelligence and machine learning.

Contact person for the project:

Name:	Dr Syed Zulqarnain Gilani	Contact number:	+618 6304 3946
Email:	<a href="mailto:s.gilani@ecu.edu.au">s.gilani@ecu.edu.au</a>		