Project Design Phase-I
Proposed Solution Template

Date	06 May 2023
Team ID	NM2023TMID18418
Project Name	CancerVision: Advanced Breast Cancer Prediction with Deep Learning

Proposed Solution Template:

Project team shall fill the following information in proposed solution template.

S.No.	Parameter	Description
•	Problem Statement (Problem to be solved)	Despite major advances in genetics and modern imaging, the diagnosis catches most breast cancer patients by surprise. For some, it comes too late. Later diagnosis means aggressive treatments, uncertain outcomes, and more medical expenses. As a result, identifying patients has been a central pillar of breast cancer research and effective early detection.
•	Idea / Solution description	With an aging and growing population, the number of women requiring either screening or symptomatic mammograms is increasing. To reduce the number of mammograms that need to be read by a radiologist while keeping the diagnostic accuracy the same or better than current clinical practice, we develop Man and Machine Mammography Oracle (MAMMO) - a clinical decision support system capable of triaging mammograms into those that can be confidently classified by a machine and those that cannot be, thus requiring the reading of a radiologist.
•	Novelty / Uniqueness	Automatic novelty detection of metabolites of 2D-TOCSY NMR spectra.etabolic profiling of the dynamics changes in Breast cancer tissue sample.Accurate and fast automatic multicomponent peak assignment of 2D NMR spectrum.One- and multi- novelty detection of metabolites.
•	Social Impact / Customer Satisfaction	Breast cancer is the most frequent cancer in women worldwide and is increasing, particularly in developing countries where most cases are diagnosed in late stages.
•	Business Model (Revenue Model)	Deep learning breast cancer risk models demonstrate improved accuracy compared

		with traditional risk models but have not been prospectively tested. We compared the accuracy of a deep learning risk score derived from the patient's prior mammogram to traditional risk scores to prospectively identify patients with cancer in a cohort due for screening.
•	Scalability of the Solution	Breast cancers are complex ecosystems of malignant cells and the tumour microenvironment. The composition of these tumour ecosystems and interactions within them contribute to responses to cytotoxic therapy. Efforts to build response predictors have not incorporated this knowledge.