

Garbh-Ini Ultrasound Image-Based Gestational Age Estimation System (GAUGE)

TECHNOLOGY AVAILABLE FOR TRANSFER

UNMET NEED AND OPPORTUNITY

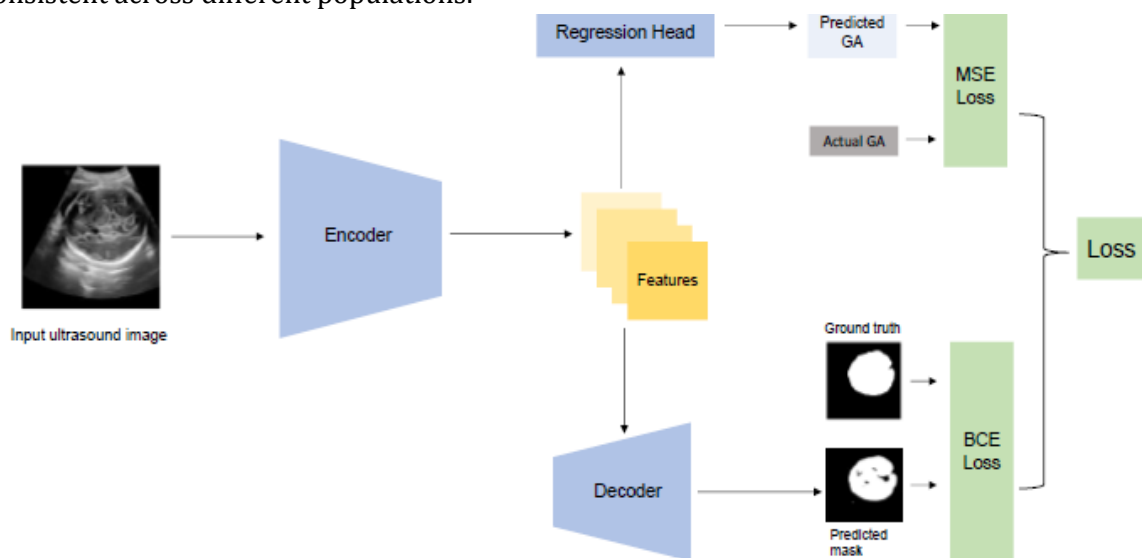
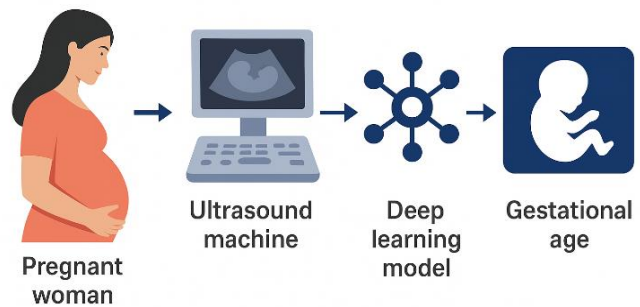
Estimating gestational age or GA is very important for the care of both mother and the baby, as well as for tracking pregnancy outcomes like preterm birth, poor growth and still birth rates. In many low- and middle-income countries (LMICs), most women seek antenatal care after 14 weeks of pregnancy, which makes early and accurate dating harder. The most common method of estimating GA is using the last menstrual period (LMP), is not always reliable because women may forget the date, have irregular cycles, contraceptive use or recent breastfeeding. Current GA estimation relies on fetal biometry, which is susceptible to ethnic and pathological variations in fetal growth and becomes less accurate in the late trimesters specially in diverse LMIC settings. This leads to misclassification of pre-term birth and impacts clinical decisions.

Therefore, an innovative technology for estimating GA is urgently needed that do not rely on fetal biometry or LMP to overcome the limitations of these methods.

TECHNOLOGY

The technology estimates GA using ultrasound images of the fetus, mainly the head with the help of advanced AI models. Unlike traditional methods that rely on measurements like head size or abdominal circumference, it analyzes finer image details that stay consistent even when growth is abnormal. A deep learning model identifies the head region, processes its features and predicts GA with high accuracy. The system can also recognize and reject unclear images, reducing mistakes. This makes GA estimation more reliable and consistent across different populations.

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Schematic diagram of GAUGE: The encoder extracts features from input ultrasound images, which the decoder uses for head segmentation and the regression head uses for GA prediction.



Biotech Consortium India Limited

UNIQUE SELLING PROPOSITIONS



Estimates GA directly from fetal head ultrasound image using advanced AI, not from traditional biometric measurement.



Rejects unreliable images using Conformal Prediction (CP) framework, reducing erroneous predictions.



Deep learning model performs head segmentation and GA regression simultaneously.



Consistent across Small for Gestational Age (SGA) and Appropriate for Gestational Age (AGA).



35-44% more accurate than conventional methods (Hadlock, INTERGROWTH-21st).



Reduces misclassification of preterm birth and growth restriction, where biometry fails.

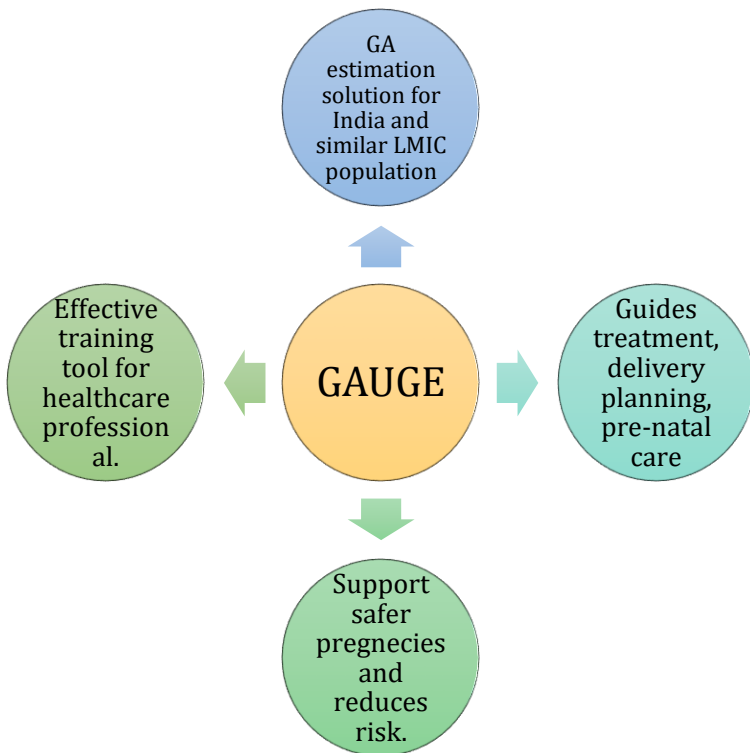


Visual interpretability via heatmaps highlights fine intracranial details, not just skull outlines.

STAGE OF DEVELOPMENT

The technology is currently placed at TRL-6, having been tested, prototyped and validated in clinical settings with statistical comparisons to standard formulas (Hadlock, INTERGROWTH-21st) supporting its generalizability.

APPLICATION



INTELLECTUAL PROPERTY

Indian and PCT Patent filed

LICENSING OPPORTUNITY

BCIL is looking for suitable Licensee for transfer of this technology

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