

Sectional correctness in mid-trimester fetal brain imaging: A single network, vision-driven deep learning architecture for diagnostic standardisation

Rifqa Fathima S , Dhivya Sree Mahendran , Anusha A , Shunmuga Sundari V , Shyam Ayyasamy , Aparna Purayath , Manojkumar Lakshmanan , Suresh Seshadri , Mohanasankar Sivaprakasam

Problem Statement

- Non-standard plane acquisition leads to biometric errors.
- Risk of missed brain anomalies caused due to inconsistent brain plane selection.

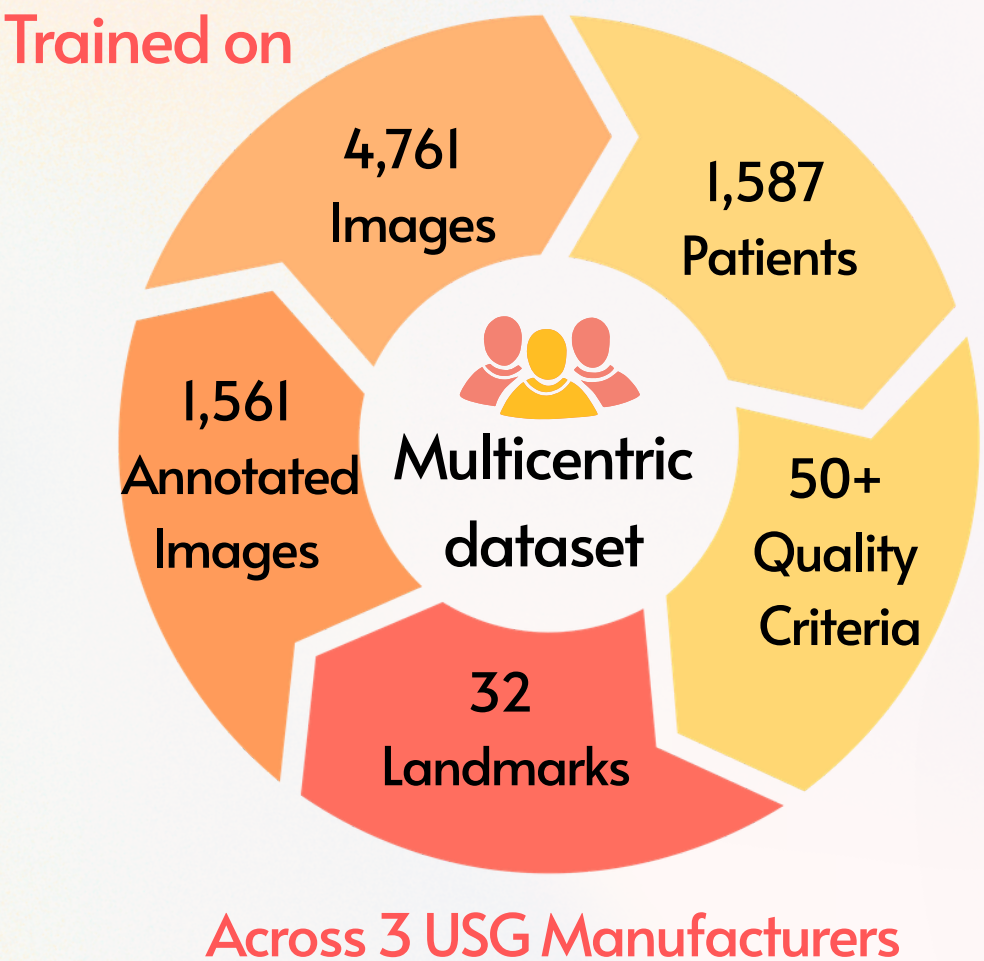
Objective

- Anatomical landmark verification to eliminate operator variability & plane acquisition errors.
- Detecting 32 ISUOG-defined neuro-anatomical landmarks & standardising brain measurements.

Methods

- AI model developed to classify axial brain planes & identify plane-specific brain structures.
- Categorizing planes as “Standard” or “Non-Standard”.

Dataset

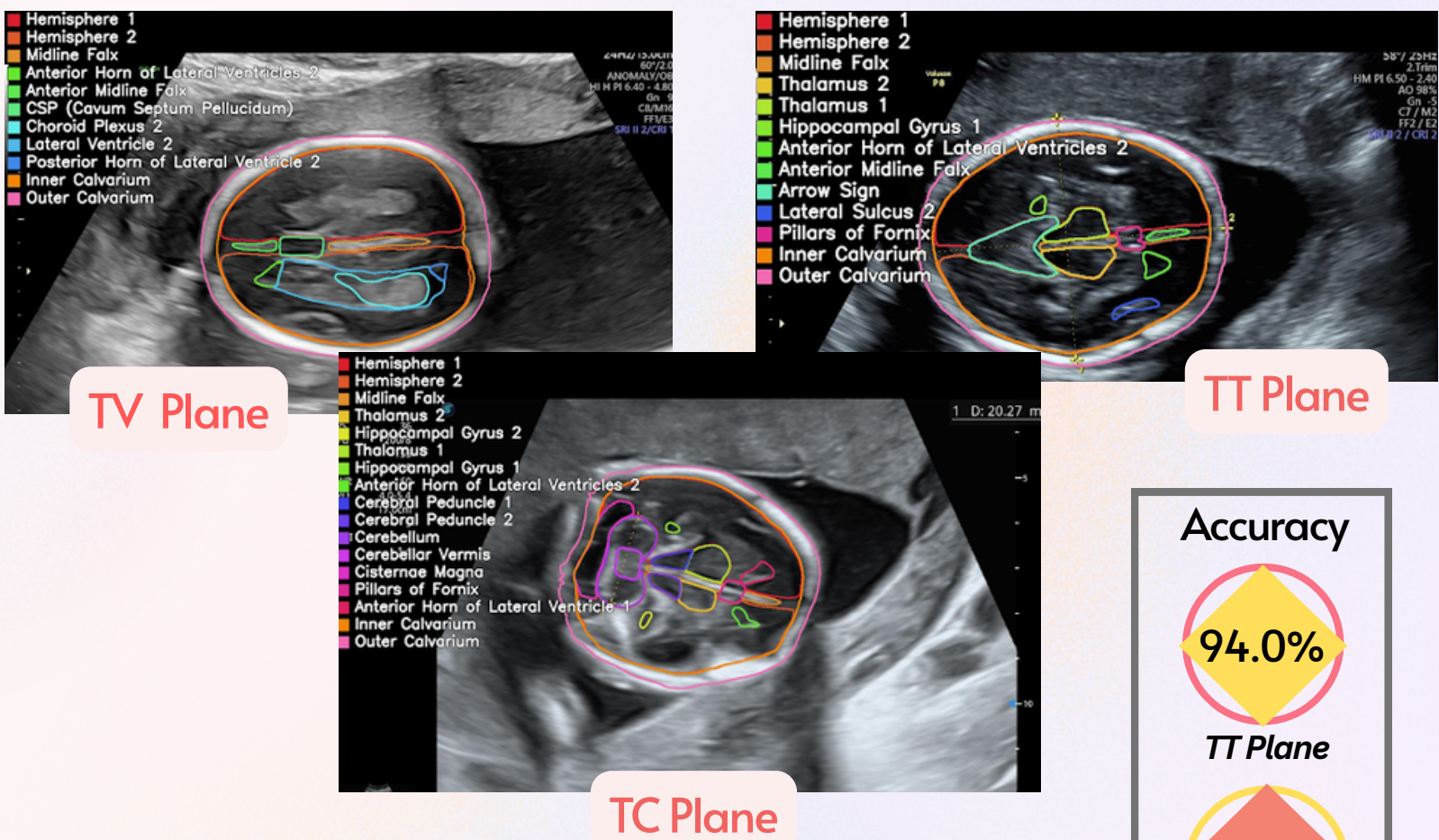


Conclusions

The AI model mitigates operator dependency by enforcing sectional correctness before biometry, ensuring diagnostic standardization in routine fetal brain screening.

Results

Validated on 300 expert-annotated images



Biometry Mean Absolute Error



Accuracy



TT Plane



TC Plane



TV Plane