**Supplemental information**

**Toward deep observation: A systematic**

**survey on artificial intelligence techniques**

**to monitor fetus via ultrasound images**

Mahmood Alzubaidi, Marco Agus, Khalid Alyafei, Khaled A. Althelaya, Uzair Shah, Alaa Abd-Alrazaq, Mohammed Anbar, Michel Makhlouf, and Mowafa Househ

# Towards deep observation: A systematic survey on artificial intelligence techniques to monitor fetus via Ultrasound Images

Mahmood Alzubaidi[1,4*], Marco Agus[1], Khalid Alyafei[2 3], Khaled A Althelaya[1], Uzair Shah[1], Alaa A. Abd-Alrazaq[1], Mohammed Anbar[3], Michel Makhlouf [2], And Mowafa Househ[1*]

**Table S1 Data extraction form that used to perform data extraction for the included studies, Related to Table 1 and Table 2**

| Concept | Definition |
|---|---|
| 1. **paper** | Paper name |
| 2. **Country** | Country where the study was published |
| 3. **University** | University where the study was published |
| 4. **journal or conference** | The paper type (i.e., peer-reviewed, conference ). |
| 5. **Year** | The year in which the study was submitted. |
| 6. **Objective** | The main objectives of the study |
| 7. **Main Organ** | The target organ of the fetal |
| 8. **Target fetal part (head, heart) when applicable** | Target part in the organ of the fetal |
| 9. **Target Health issue (disease) when applicable** | Target health issue or disease |
| 10. **US image dimensional (2D, 3D, 4D)** | Type of ultrasound that utilized in the study |
| 11. **Aim (Regression, Object detection, Segmentation and Classification)** | AI task that implemented |
| 12. **AI Branch (Machine learning or Deep learning)** | AI branch that adopted by the study |
| 13. **Classification/segmentation / regression model (CNN, SVM, RNN)** | What kind network architecture were trained |
| 14. **Feature extraction method/ optimization** | Is there any feature extraction method used to enhance the model or any optimization method were reported in the study |
| 15. **Fetal age** | Gestational age of the fetal |
| 16. **Ultrasound machine model** | Type of the ultrasound machine that used to scan the fetal |
| 17. **Dataset source (public, private)** | Is the dataset available or private |
| 18. **Dataset link (Kaggle link, research center, university hub)** | Where is the location of the dataset in case its public |
| 19. **Dataset volume** | How is the volume of the dataset |
| 20. **Training dataset** | What is training set |
| 21. **validation dataset** | What is validation set |
| 22. **Testing dataset** | What is Testing set |
| 23. **Evaluation metrics** | Performance metrics that used to evaluate the model |
| 24. **Result** | Result of each study |
| 25. **Future Work** | Future work of each study |
| 26. **link code** | Link to code if available |
| 27. **Observation for reader** | Report any observation for the easer for each study |