Wireless Feto-maternal Vital Sign Monitoring and Follow-up for Resource Limited Setting

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1 Introduction

- Maternal and neonatal mortality related to childbirth is one of the big challenges of the developing world and its reduction is a key international development goal.
- Fetal heart rate, uterine contraction, maternal blood pressure, body temp, heart-rate and oxygen concentration are crucial in determining the wellbeing of a laboring mother and the fetus.
- Many of the defacto feto-maternal monitoring instruments such as Cardiotocography (CTG) are expensive, grid dependent and hard to maintain.

2 Proposed Idea

- Our idea is to construct an integrated wireless feto-maternal vital sign monitoring and alerting system for low-resource setting.
- Bio sensors are attached to a laboring mother non-invasively, collects vital sign data in real-time.
- The real-time data is being processed by a rechargeable battery powered microprocessor is delivered for a real-time visualization.
- The visualization is based on the WHO standard known as partogram which can be accessed by mobile phones, tablets and computers.

3 Aims

Introduce a low cost, portable vital-sign monitoring device in low resource setting

- The device will promote an automated, accurate, and efficient vital sign collection.
- Sensors variety, cost and accuracy increased tremendously to attain low cost device
- 3D printing became more available and cheap

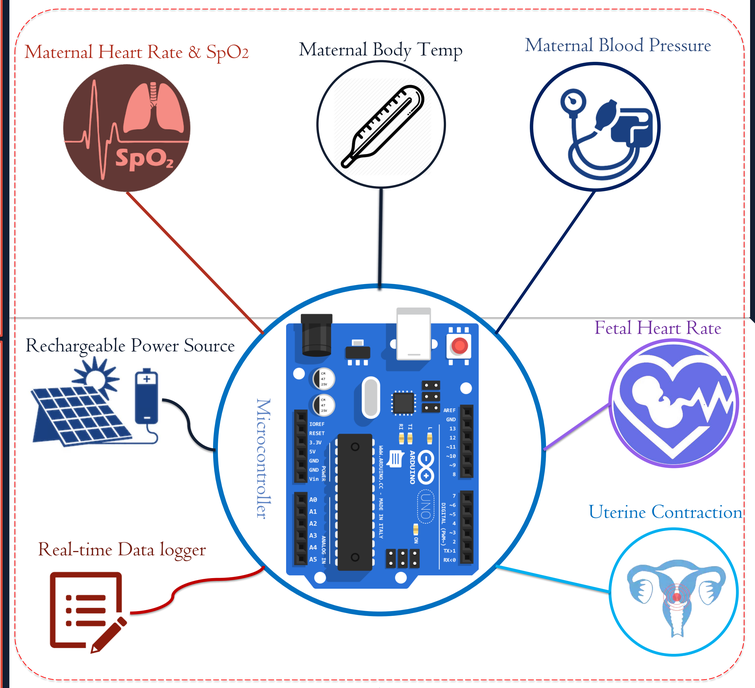
Assist the health care process by:

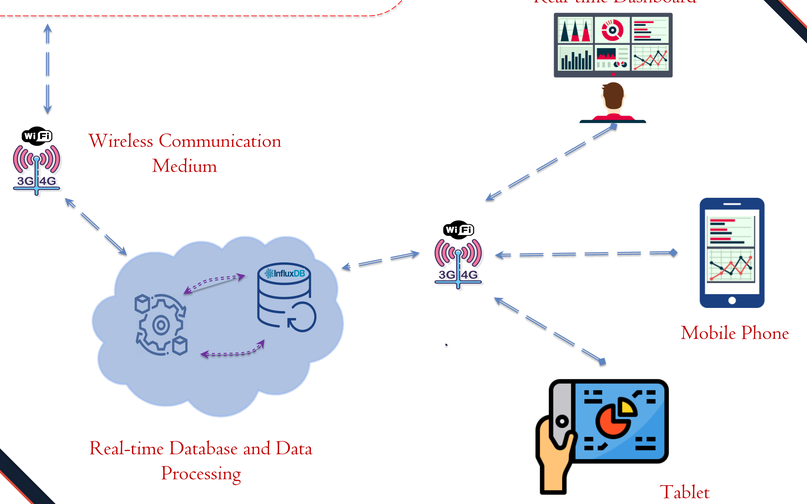
- Automating the vital-sign collection and monitoring based on Internet of Things.
- Reducing health care professional burnout
- Active alerting upon occurrence of risky vital signs

Deliver optimal care by:

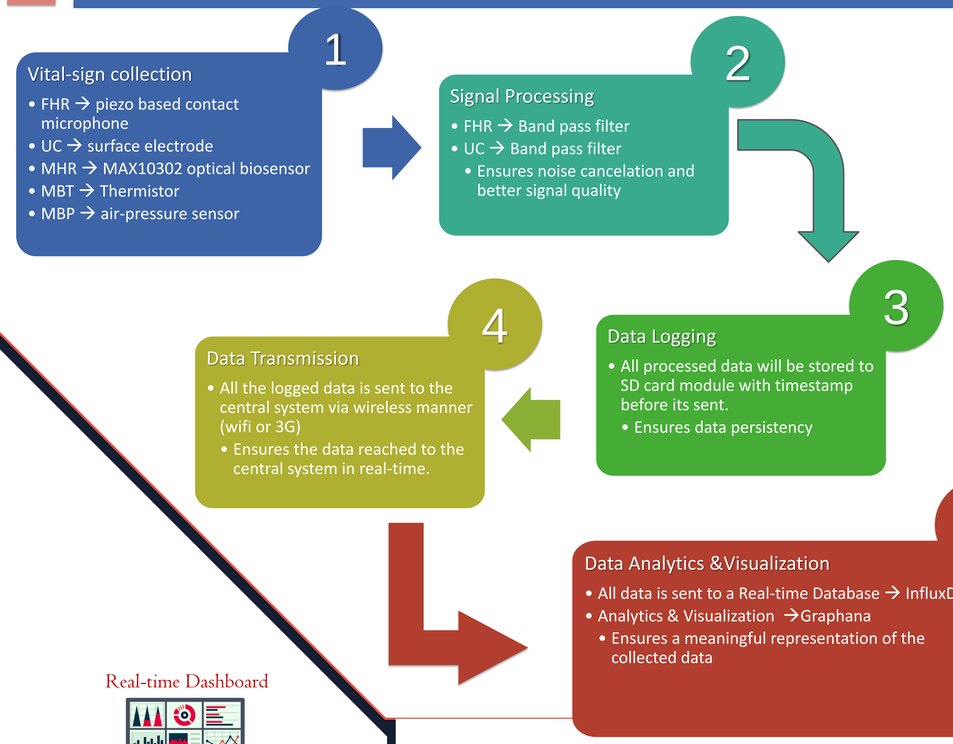
- Reducing errors in the vital-sign collection.
- Producing a real-time vital-sign data of the fetus and the mother to the health care professional at his/her vicinity.
- Improving patient outcomes

4 Hardware & Software Components





5 Method



6 Result & Experiment

Tasks	Activities	Result and Deliverable
Characterizing of laboring mother service	Done	Documentation
Conduct Case Study	Done	Case Study Report
Examine privacy and user perception	Done	Case Study Report
Sensor Characterization	Done	Documentation
Designing low-cost instrument	on progress	80% Complete
WebApp Development		
System integration and building data visualization		
Testing	Planned	-NA

7 Future Directions

- Integrate Cervical Dilatation optical measurement.
- Integrate Artificial Intelligence for labor predication.
- Produce final all in one prototype.
- Large scale production of the device.
- Finding a business strategy for its sustainability.

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