

RET Project: ML for Newborn Medical Sensors

Raquel Diaz¹, Daniel Gulick PhD², Dr. Jennifer Blain Christen² [1] Trevor Brown HS [2] School of ECEE at Arizona State University,



Motivation

- Early Detection of potential medical diseases in newborns.
- Time frame is within • hours of birth.
- Detect serious health ٠ conditions such as hypoxia or cerebral palsy.



ra A. Fulton Schools of Engineering ARIZONA STATE UNIVERSITY

Current Status

- Current Medical Baby Boot measures O2 and Heart rate.
- Build on previous ML ٠ studies performed on blood gas analysis of neonates during pregnancy complications.

Machine learning pipeline for newborn screening

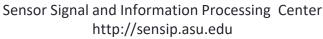
Data Preprocessing **Classification model** Interpretable and Feature selection non-interpretable

Feature construction

- Essential modules
- classification methods Performance optimization

Data sampling

Optional modules



Pattern recognition

· Feature importance

Biomarker discovery

Our Research

- Apply ML algorithms to predict CO₂, pH, Glucose, and O_2 **Biometric Data**.
- Simulating Sensor **Detection using Arduino** Uno Circuit Board for plants.
- Identify key features.
 - Use ML to create an optimal linear regression algorithm.



