Project Assignment: Camera & voice-based feeding time, sleep and wake up state detection of a neonatal

Context:

Do you want to be part of an innovation project and have a direct and tangible positive impact on people and society?
In collaboration with a startup in the medical field and as a small sub-project, we would like to detect and monitor an early born sleep and wake up state in a dynamic light environment and also detect if he/she is hungry and needs to be fed without requiring any wires or physical contact.

About us:

We are an innovative startup in the Medical field supported by an international team of scientists and engineers on a mission to help and protect very fragile groups like premature babies and elderly people in the society.
Our investment is our knowledge, expertise and over 20 years of experience in the healthcare at national and international level.
We are independent in building and using state-of-the-art technology in a seamlessly integrated platform that includes remote sensing, multimedia, data monitoring and analytics.

Over time, we have built strong relationship and collaborate with different working groups and disciplines at TU-Delft, HHS-Delft, companies and hospitals to help us make this innovative dream reality.

Assignment:

The student will do research and creates a system that detects and monitors an early born sleep and wake up state by means of an ordinary camera in a dynamic light environment.
By combining of baby's wailing the with camera images, you are being challenged to detect whether the neonatal is hungry and he/she is needed to be fed by the mother or the caretakers. The sleep and wake up state including feeding time must be sent to the doctors or caretakers via an existing alert system.

Data processing must be done locally in an embedded system and the results will be stored in our backend system. The data transfer must be secured and compressed. The data and their results must be accessible per patient based on their time stamps stored in the database.

The final code needs also to be portable to another embedded Linux with less/limited amount of time/effort.

Providing documentation for the code, deployment procedure and the test results for the prototype at different stages is part of this assignment!