SUP'COM
Higher School of Communication of Tunis

Design Document: Baby Awakeness Monitoring

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1 General overview

Monitoring a baby's sleep is a vital aspect of ensuring their well-being and healthy development. However, traditional baby monitors often lack the capabilities to provide caregivers with detailed, real-time insights into sleep patterns, disruptions, and the quality of rest. This gap in functionality can lead to increased stress for parents, who must rely on manual observations to determine if their child is sleeping soundly. In today's busy world, there is a growing need for a more intelligent and reliable solution that not only monitors sleep but also offers timely alerts and insights to help caregivers make informed decisions.

This project aims to develop a smart baby sleep monitoring system utilizing IoT and machine learning technologies. By leveraging a night vision camera and cloud connectivity, the system continuously monitors the baby's sleep state, detects any irregularities, and provides caregivers with notifications and insights through a mobile application. With advanced data security measures, only essential information is transmitted to the cloud, ensuring both privacy and efficiency.

The primary functionalities of this system include:

- Accurately monitoring and tracking baby sleep patterns in real time.
- Providing caregivers with a sleep health indicator and insights based on observed patterns.
- Notifying caregivers promptly if any sleep disruptions or unusual activity are detected.

2 Use case diagram

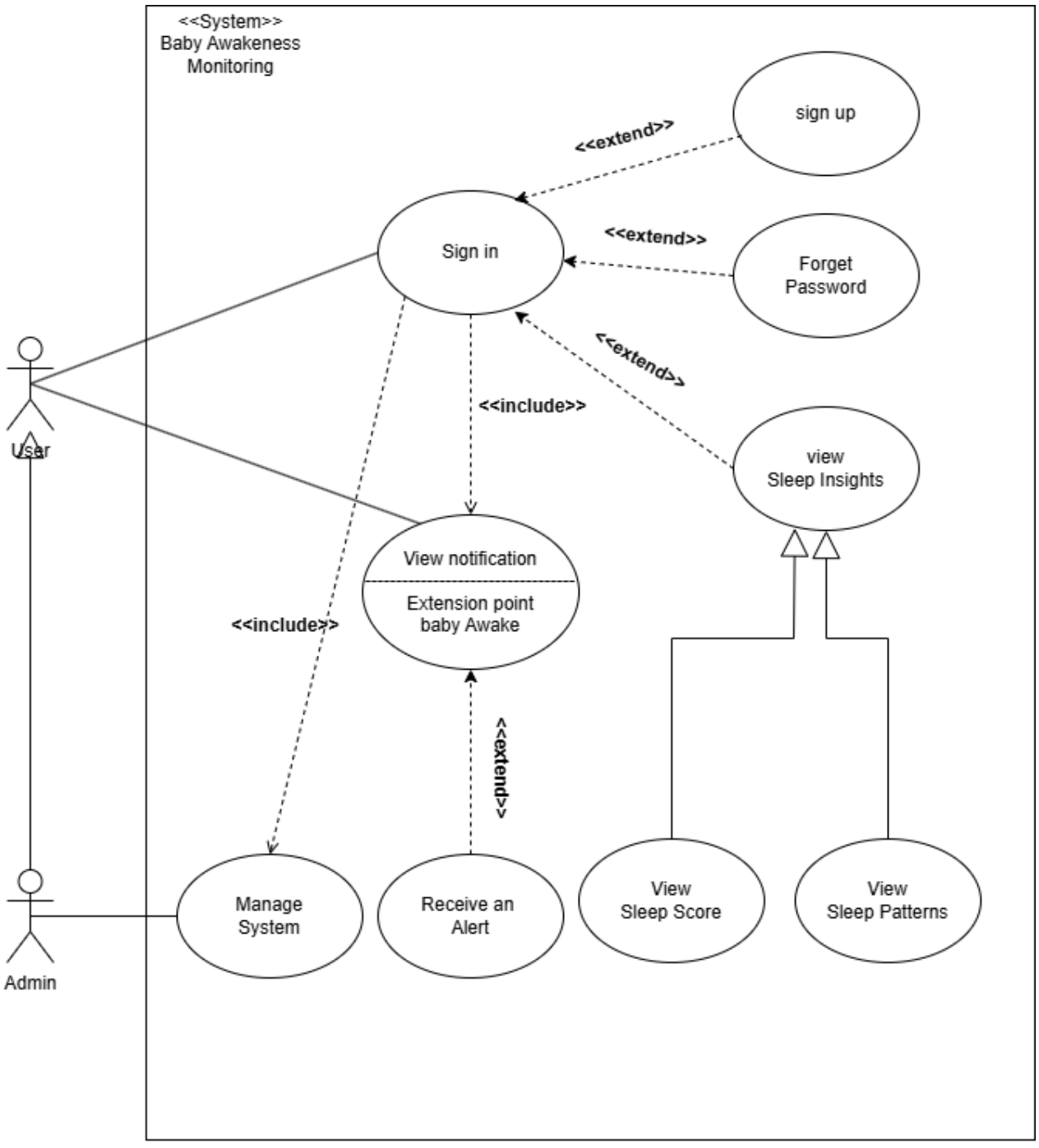

Figure 1: Use Case Diagram

3 Class diagram

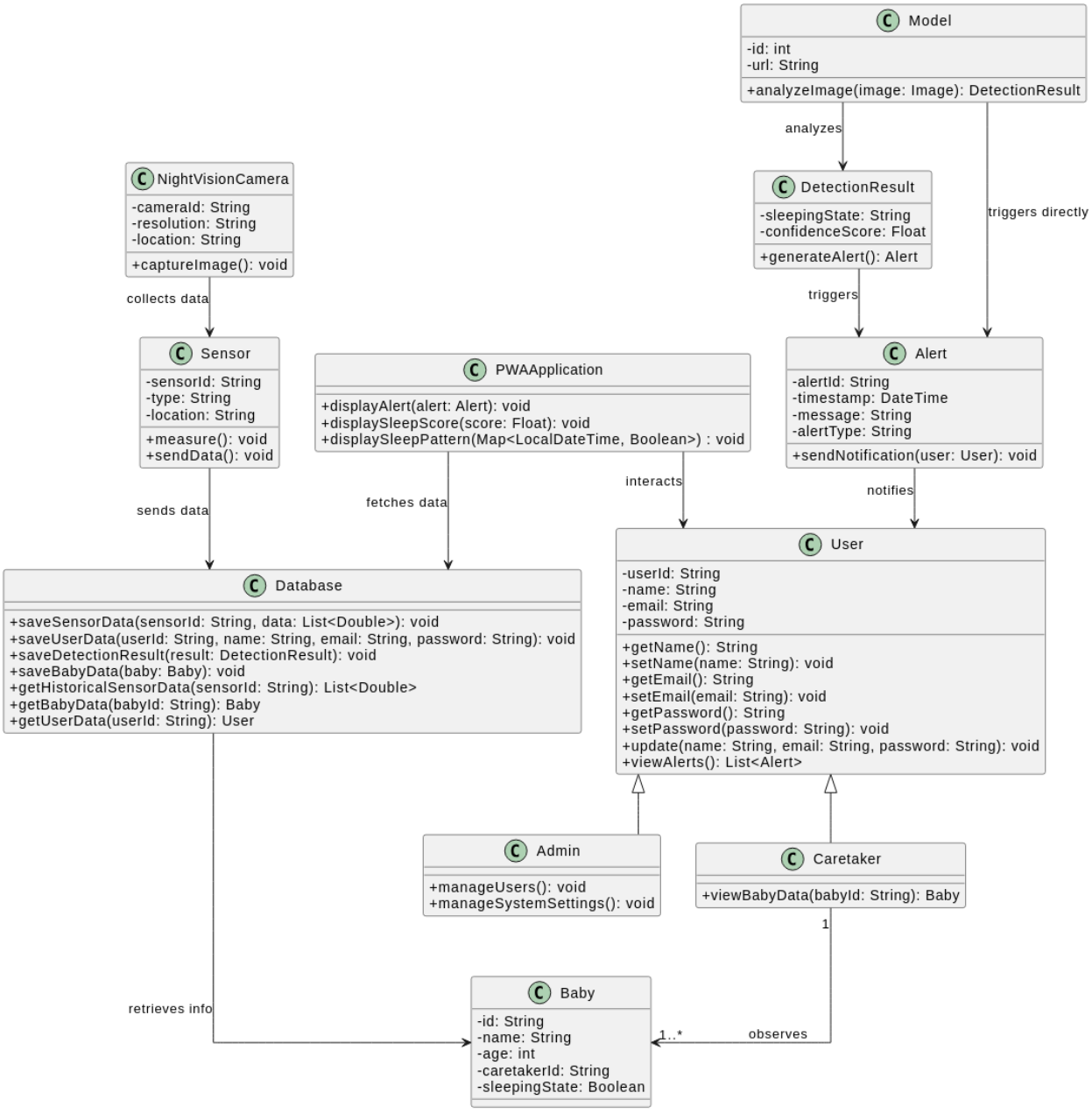

Figure 2: Class Diagram

4 Sequence diagram

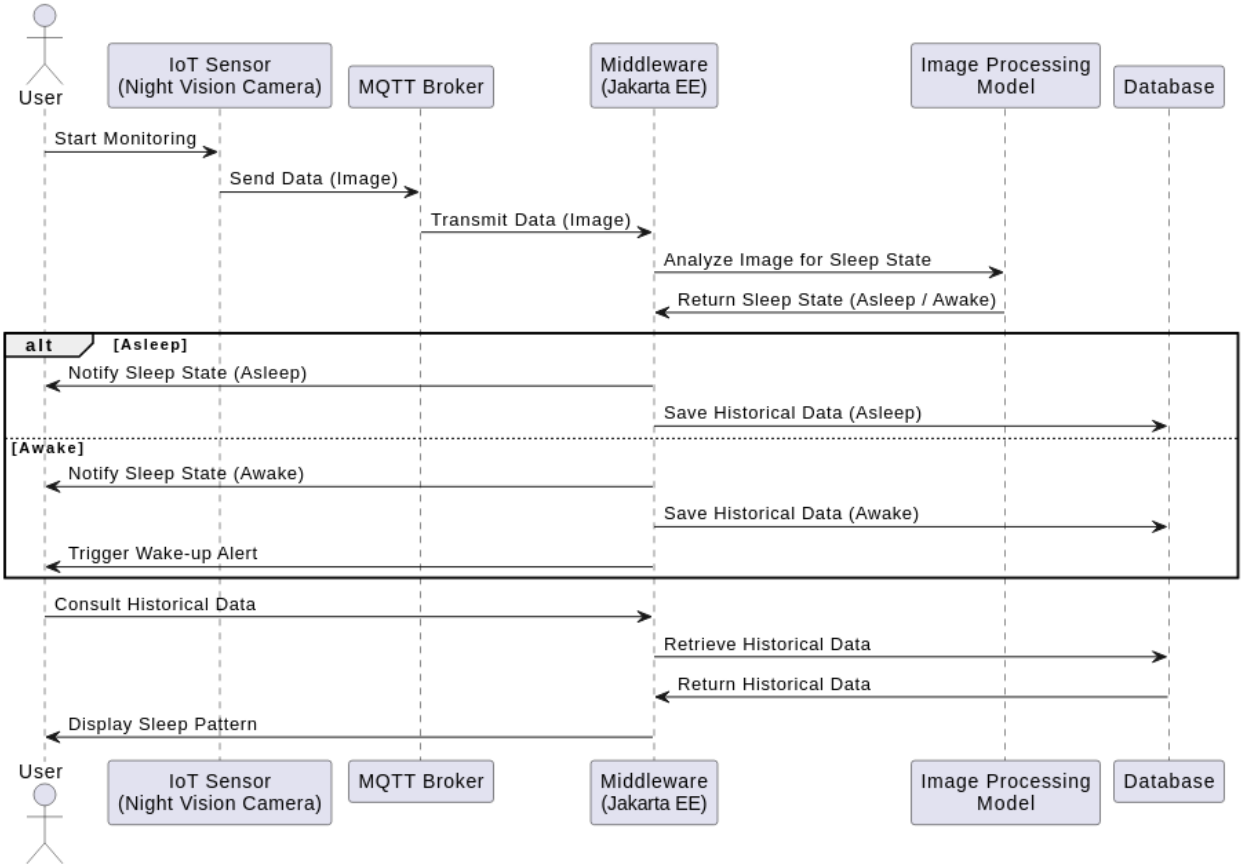

Figure 3: Sequence Diagram

5 Deployment diagram

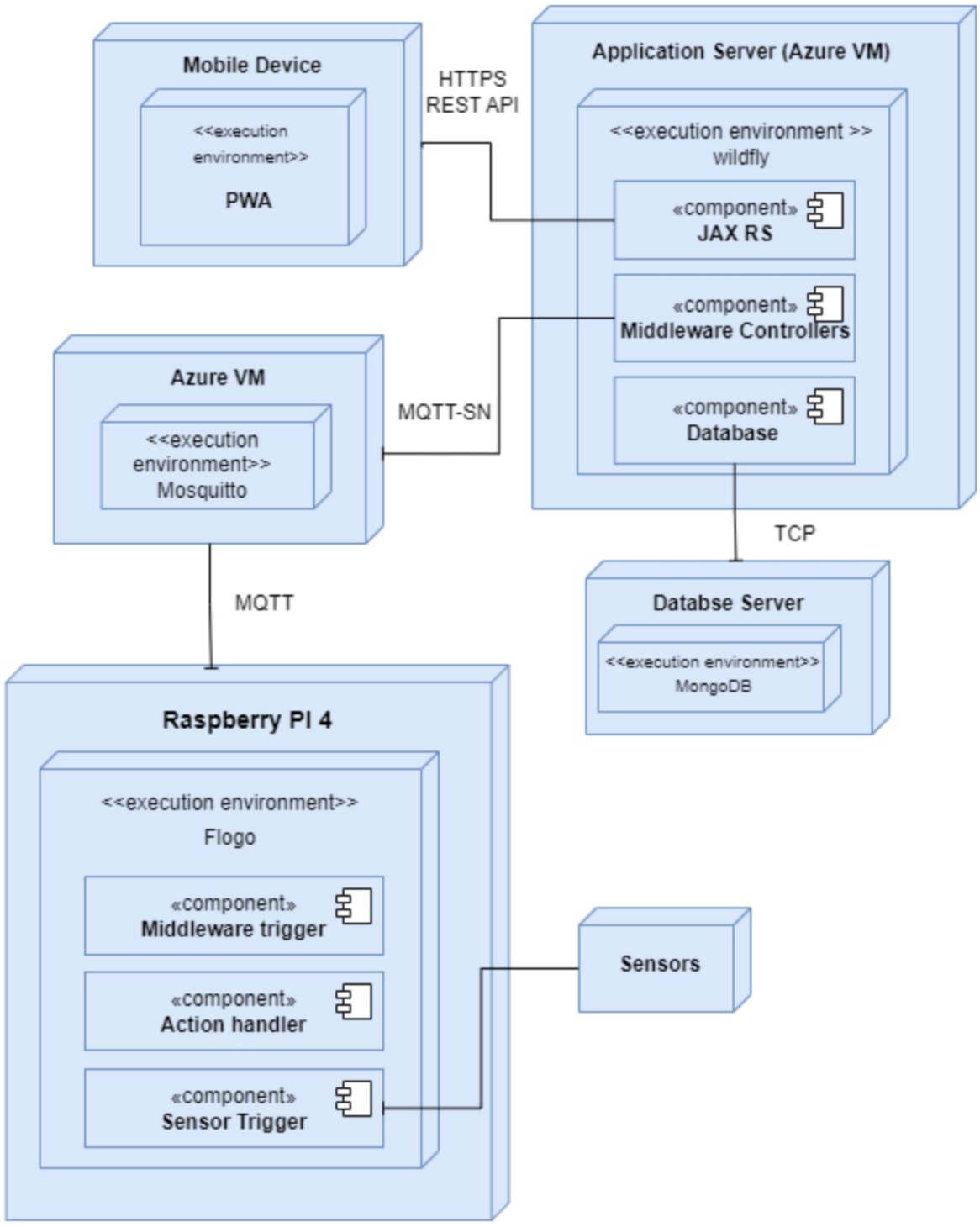

Figure 4: Deployment diagram