

InteLLigEnT rEMoTe infant/toddler Monitoring system

Intelligent Remote Monitoring of the individuals who cannot (or can only partially) take care of themselves is a technically challenging problem that is gaining interest. In this project, we are after a system that intelligently monitors a home with "some" infants and "some" caregivers inside. Typical remote infant monitoring systems that are commercially available take the audio-visual records of the premises for archival purposes and also lets the parents remotely access to see what is currently happening in real-time. Such a system is not able to produce any alarms or any other informative indications for its users and basically the huge visual information provided by the system should be manually processed in order to assess how well the infant(s) are taken care of. **InteLLigEnT rEMoTe infant/toddler Monitoring system** is expected to provide the functionality of these legacy monitoring systems plus

- Able to incorporate other sensing modalities such as ambient light and temperature, contact type sensors on doors and windows, sound.
- Able to work with an indoor ad hoc network (has no infrastructure such as a wireless sensor network) among sensors and a base controlling unit.
- Able to assess the situation the infant is in, such as:
 - o Position (where in the house? in the balcony or in his/her room?)
 - o Asleep / Awake
 - o Crying or calm
- Able to assess the situation caregiver is in, such as:
 - o Position (in or left home? in the same room with the infant or not?)
 - o Asleep/Awake
- Able to assess the state the physical surrounding is in; some examples are:
 - o Ambient Temperature (for health reasons as well as for fire detection)
 - o TV status (turned on or off)
 - o Status of the doors and windows (open or closed)
 - o Status of the drugs cabinet (open or closed)
 - o Noise levels in the rooms
- Able to reason about the status in the house using current snapshot and the past information and produce alarms of different priority when necessary. Some examples are:
 - o Baby is awake and the caregiver is not with the 3 month old baby for the last 5 minutes. (Produce an alarm with medium priority)
 - o Drug cabinet in the living room is open and the infant is in his/her room sleeping (alarm with low priority)
 - o The caregiver has left the house 10 minutes ago and the 3 years old toddler is moving towards the balcony and the door is open (**ALARM !!!**)
- Provide a user friendly interface both for the end user and also for debugging and commissioning purposes.
- Able to provide web based remote access for the users.
- Able to provide alarms by generating automatic GSM and POTS calls and by SMS.
- Able to archive events and display them in a user friendly GUI which has predefined query options to view the archive.
- Able to produce notifications according to predefined rules, defined via GUI.
 - o Produce notification for the caregiver not to forget the medicine the infant should take for this week at every 15.00 pm.
 - o Notify the caregiver about the infants' favorite cartoon starting at 10.00 AM, if the infant is not sleeping.
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