



BabySitter AI

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Literature Review

BabySitter AI

The need

- Accidental Suffocation and Strangulation in Bed (ASSB) is a prominent cause of death for newborns.
- Parents cannot stay up all night to watch their babies all the time

The idea

AI agent can be taught to recognize images/video in which babies are in dangerous situation while sleeping

The solution

BabySitter AI:
→ detects the baby subject & the action of that baby
→ defines if the baby is 'safe' or 'unsafe'.
→ sends notification to parents

Problem analysis

BabySitter AI

Problem specification :

using given architecture model for image classification and try to optimize it

Task environment

	Observable	Agent	Deterministic/ Stochastic	Episodic/ Sequential	Static/ Dynamic	Discrete/ Continuous
BabySitter	fully	single	deterministic	episodic	static	discrete

Data set or other source materials

1. Download 100-200 baby sleeping images on Google
2. Extract images from videos on Youtube



Example a: With this set of data, the agent should output:

- (1) Lying & FacingUp- Awake – Safe/No Alert
- (2) Lying & FacingUp- Awake – Safe/No Alert
- (3) Lying & Facingdown – Sleeping – Unsafe/Alert
- (4) Lying & FacingUp – Sleeping – Safe/ No Alert

AI Technique

Convolutional Neural Networks (CNN) - deep learning neural network designed for processing structured arrays of data such as images

Model Architectures: AlexNet / ResNet18 / SqueezeNet

Deliverable, demonstration and major components

- Visualization, object measurement, object/Pattern recognition
- Test & training sets of input data
- 3 major components:
 - detect subject
 - classify the subject's position/state
 - determine the safety of the subject to report to the parents.

Schedule and evaluation of results

- Successful of the project will be determined by the number of correct guess of baby state.
- Schedule:

	To do list	Due date
1	Collect Data (images) Manually classify data	10/10
2	Writing code <ul style="list-style-type: none">• Detect subject (baby)• Classify the subject position/state• Clarify if subject is safe/unsafe	10/30 11/5 11/10
3	Testing Gather Data Make report	11/15
4	Prepare for presentation	11/25

References:

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- [4] Task Force on Sudden Infant Death Syndrome. "SIDS and Other Sleep-Related Infant Deaths: Updated 2016 Recommendations for a Safe Infant Sleeping Environment." American Academy of Pediatrics, American Academy of Pediatrics, 1 Nov. 2016, <https://pediatrics.aappublications.org/content/138/5/e20162938?fbclid=IwARorwA47ad357F2FOn87pHctLjZA24Wb-n9hhqqYAKemRVjaXPqgWaKkO6o>
- [5] Lai, Chinlun, and Lunjyh Jiang. "An Intelligent Baby Care System Based on IoT and Deep Learning Techniques." International Journal of Electronics and Communication Engineering 12.1 (2018): 81-85.