

SWEAT RESISTANCE BIOMARKER FOR ADHD CHILDREN BASE ON ARDUINO (SRADA) TO MITIGATE UNTREATED ADHD



BACKGROUND



5%

ADHD

ANS

EDA

PROBLEM FORMULATION

- 1 How to design an arduino-based EDA device to detect stress through sweat resistance?
- 2 How does the system work and display real-time results?
- 3 How effective and precise is the device for early detection in ADHD children?

PURPOSES

- 1 Design a wearable EDA device for ADHD children
- 2 Create a system to detect ADHD with sweat resistance as its biomarker
- 3 Test the device's effectiveness and performance accuracy

RESEARCH METHOD

This research uses R&D method with experimental trials.

6 – 11 years old



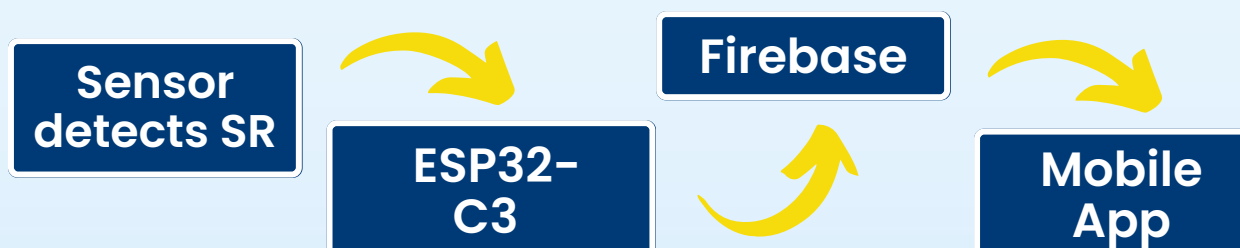
ADHD



NON-ADHD

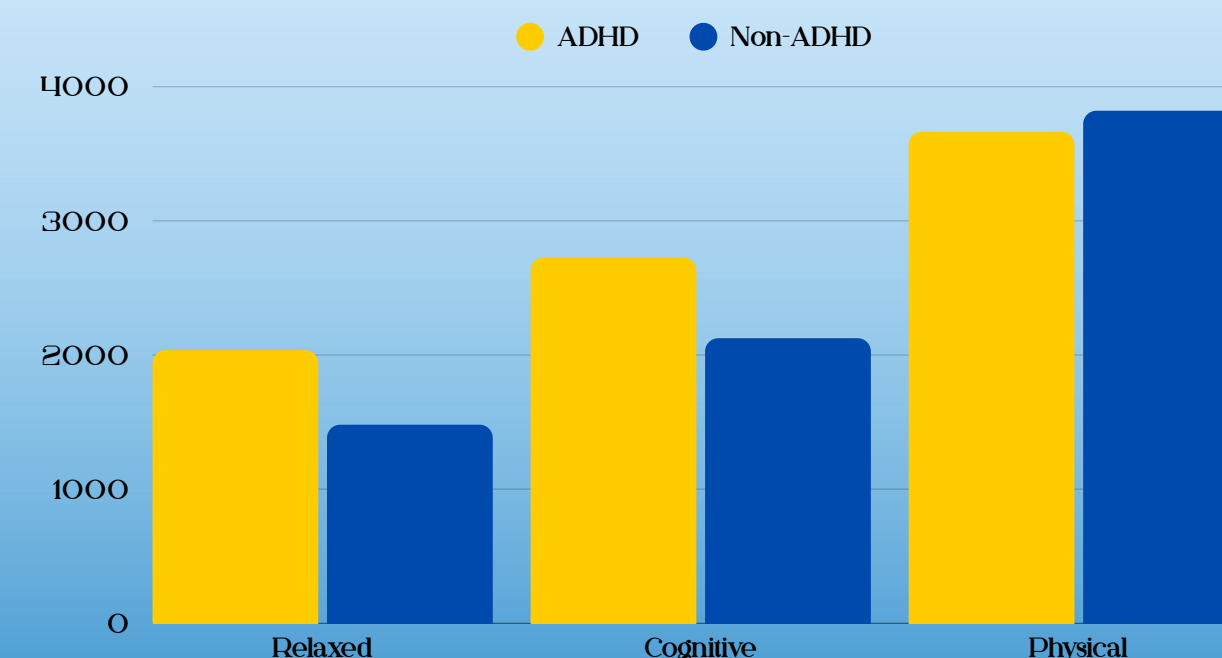
Design Test Data Analysis

APPLICATION SYSTEM



RESULTS AND DISCUSSIONS

MEAN OF SR VALUE BETWEEN 3 TASKS



EFFICIENCY & SUITABILITY

- ✓ The device works in real-time, detects stress level changes, and stores data on Firebase successfully
- ⌚ Sensor response is fast, data sent to cloud in seconds, and battery efficient

DATA ANALYSIS RESULT

Participant	Group	Trial	Sweat Resistance	Mean SR	SD SR	%CV
1	ADHD	1	2036	2036.2	11.92	0.59%
		2	2050			
		3	2020			
		4	2045			
		5	2030			
9	Non-ADHD	1	1386	1383.8	9.39	0.68%
		2	1370			
		3	1395			
		4	1380			
		5	1388			

- Participant P01 (Non-ADHD) recorded values of 1450 Ω and 1470 Ω , with a mean of 1460 Ω and an absolute error of $\pm 10 \Omega$, resulting in a percent error of 0.68% per trial.
- Participant P09 (ADHD) showed readings of 2200 Ω and 2240 Ω , yielding a mean of 2220 Ω and an absolute error of $\pm 20 \Omega$, leading to a percent error of 0.90%.

CONCLUSION

- 1 An Arduino-based EDA device (SRADA) was successfully designed to detect stress levels in children through sweat resistance changes.
- 2 The system works in real-time, displaying sweat resistance data on an app and storing it in Firebase.
- 3 The device shows effective and precise results for early detection of stress responses in ADHD children during rest and cognitive tasks.