



SPHOORTHY
ENGINEERING COLLEGE

Passion Ignited @ Sphoorthy

AUTISM JACKET



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INTRODUCTION

What is Autism ?

- Autism is a lifelong condition and affects people from all backgrounds
- Currently more males than females are diagnosed with autism.
- It is estimated that one in every 100 people in the UK have an Autism spectrum disorder.
- Many people are unaware that they are autistic and this is especially true for adults.



Symptoms of autism spectrum disorder

Hyperactive ●

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Impulsive ●

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Inattentive Behavior ●

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Epilepsy ●

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Delayed Language Skills ●

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Delayed Movement Skills ●

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Delayed Cognitive ●

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Learning Skills ●

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Signs of autism



HYPERACTIVITY



**PREFERRED TO
PLAY ALONE**



**INTOLERANCE
TO SOUNDS**



**BUILT IN THE OBJECT
IN A RULER**



NO EYE FOLLOWING



**DELAYED SPEECH
DEVELOPMENT**



DEPRESSION



REJECTING CUDDLES



SLEEP PROBLEM

PROBLEM STATEMENT

Domain: Healthcare and Assistive Technology



Selected Problem:

- Many individuals with autism often struggle with feelings of insecurity and anxiety, resulting in observable behavioral changes that hinder their overall functioning and quality of life.
- This issue highlights the critical need for an effective intervention that can provide timely and tailored emotional support.
- To address this pressing challenge, our objective is to create an Autism Support Jacket, integrating advanced pulse monitoring and responsive mechanisms.

EXISTING SOLUTION

- Currently, a widely recognized and practiced method for providing emotional support to individuals with autism is cuddling and hugging by parents or guardians.
- Physical touch and close interactions, such as cuddle hugs, are known to help individuals with autism feel secure, reduce anxiety, and provide a sense of comfort, aiding in managing emotional challenges and promoting overall well-being.



PROPOSED SOLUTION

- ❑ The proposed solution is an Autism Support Jacket, designed exclusively for children with autism, aiming to provide personalized and timely emotional support using innovative technology.
- ❑ This jacket is developed to address the emotional difficulties experienced by individuals with autism by integrating vital sign monitoring and comforting sensations, thereby offering proactive and tailored emotional support.



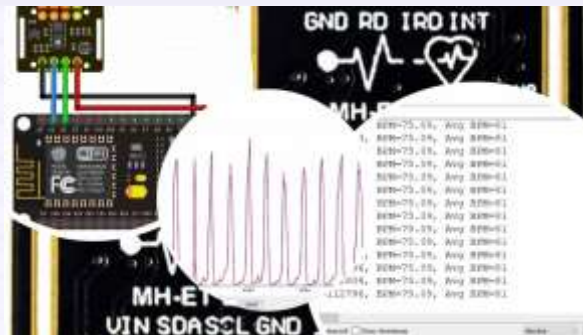
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- ❑ When the jacket detects an impending autistic episode through continuous vital signal monitoring, it activates a pump to inflate a balloon inside, creating a gentle and reassuring hug-like sensation, helping the child cope with anxiety and insecurity effectively.



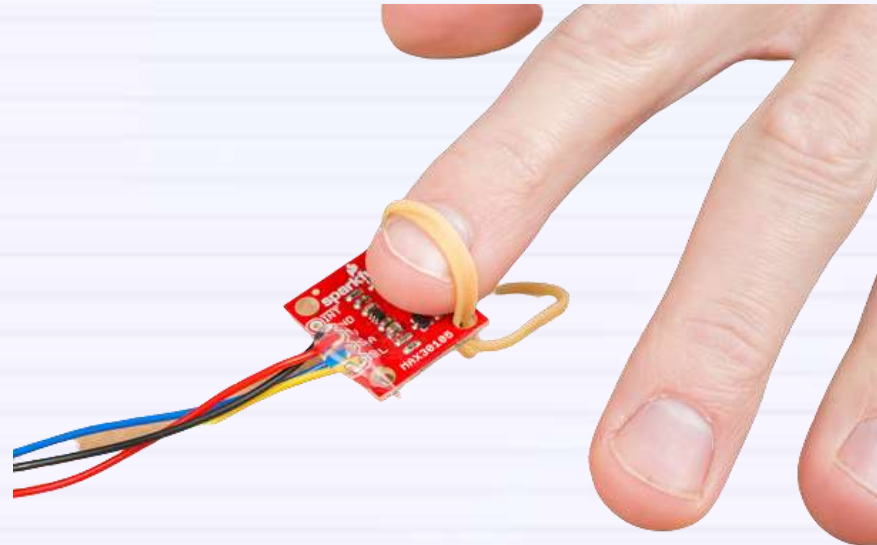
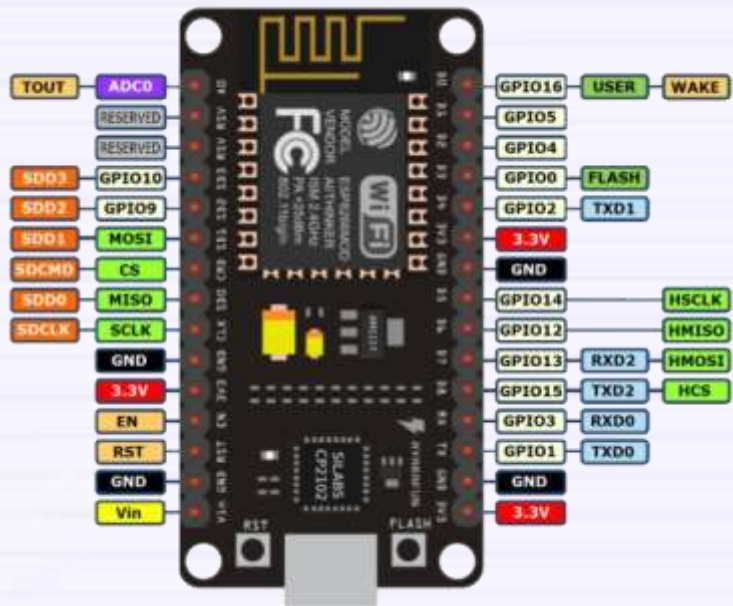
WORKING AND INNOVATION

- The Autism Support Jacket operates through a comprehensive system that involves pulse monitoring, heart rate tracking, and blood oxygen saturation analysis. This vital signals monitoring is conducted using the advanced Max30105 sensor. The sensor gathers real-time physiological data and efficiently transmits it to the ESP8266MOD microcontroller.
- The microcontroller plays a central role in this system, receiving the continuous stream of vital sign information from the sensor. Its key function is to ensure consistent communication between the sensor and the guardian responsible for the child with autism. Through this seamless connection, the microcontroller offers real-time updates on the child's physiological state.

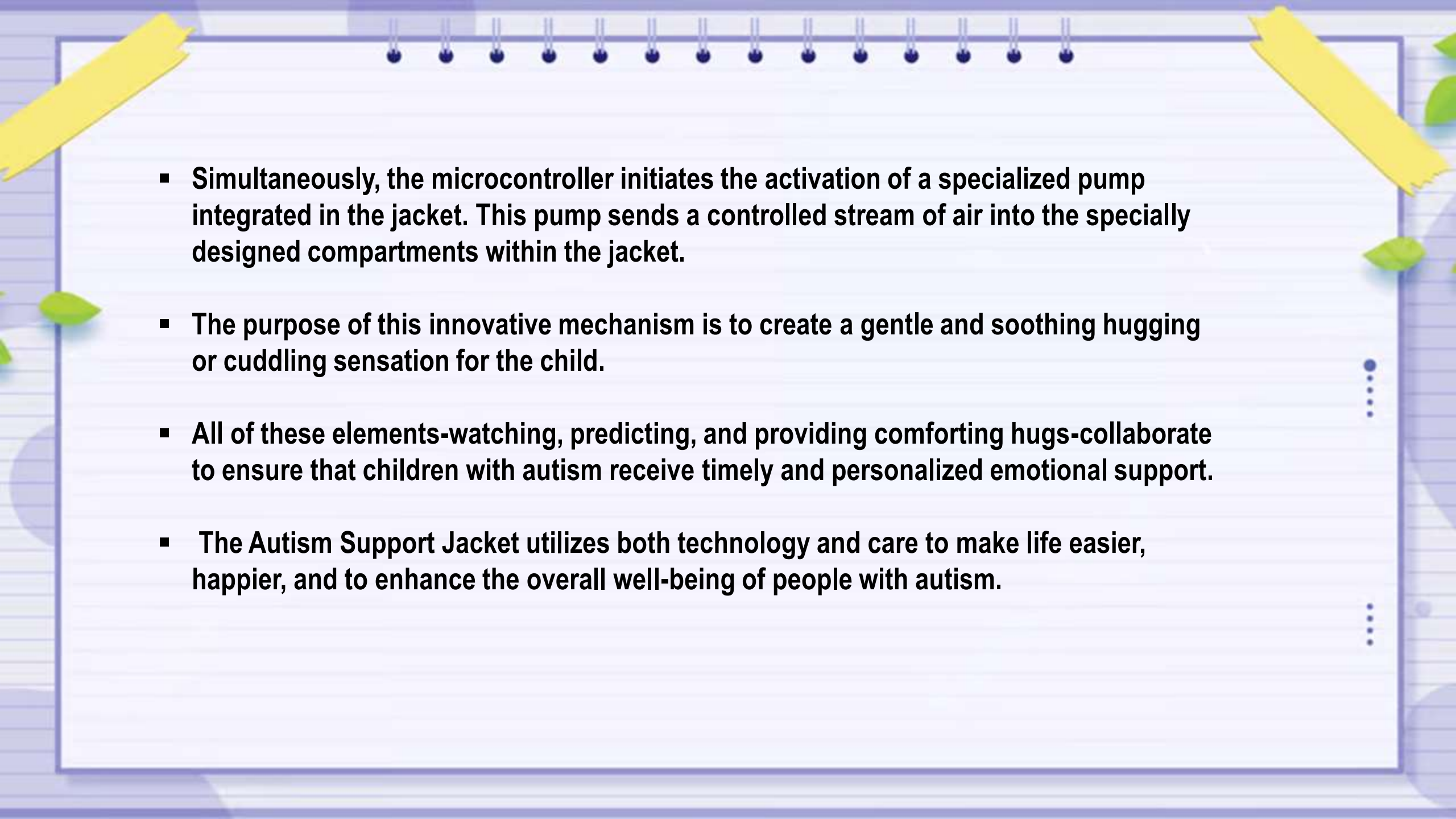


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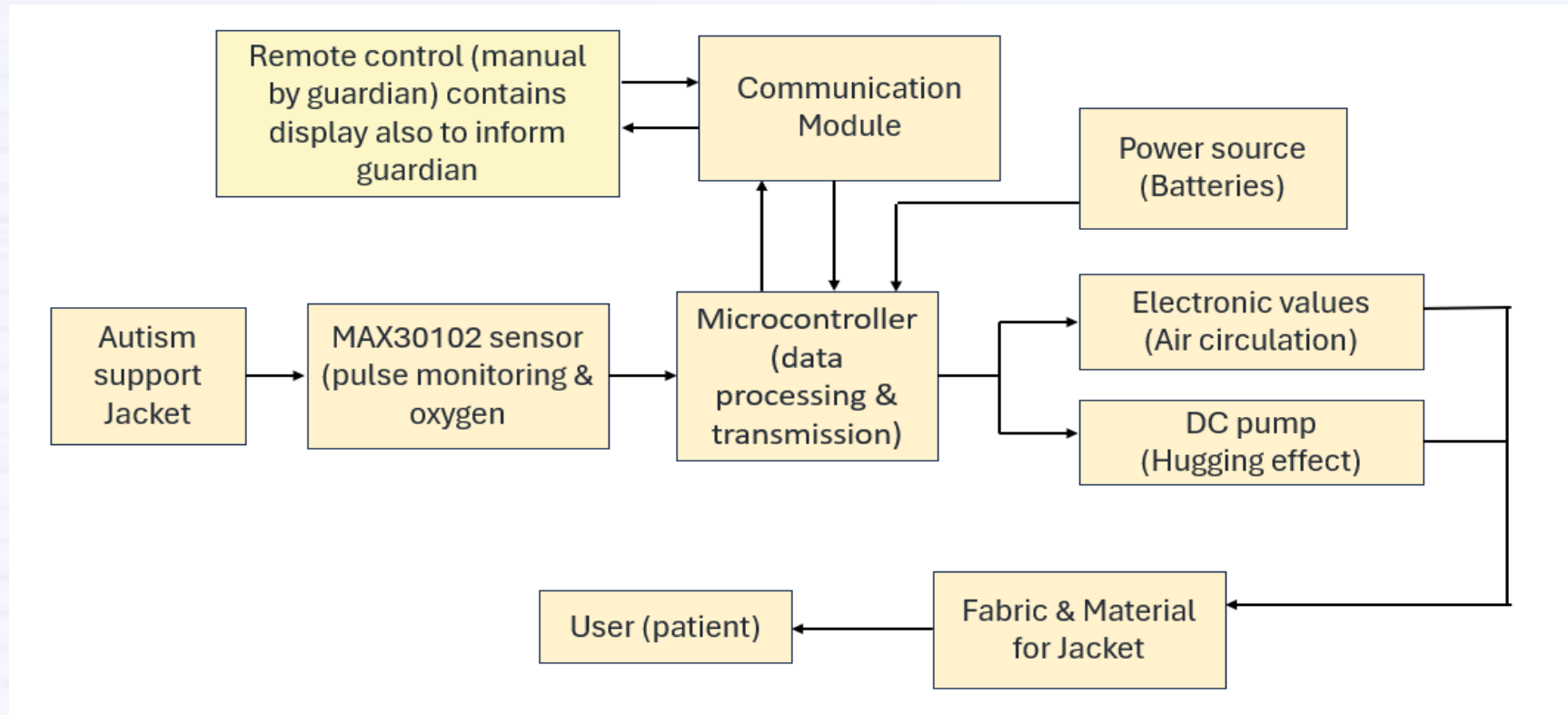
- Leveraging the data from the Max30105 sensor, we have integrated code into the microcontroller that predicts autistic attacks. This prediction is based on historical data from individuals previously affected by autism. When an imminent attack is detected, the microcontroller promptly triggers an alert to the child's guardian, notifying them of the developing situation



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- **Simultaneously, the microcontroller initiates the activation of a specialized pump integrated in the jacket. This pump sends a controlled stream of air into the specially designed compartments within the jacket.**
 - **The purpose of this innovative mechanism is to create a gentle and soothing hugging or cuddling sensation for the child.**
 - **All of these elements-watching, predicting, and providing comforting hugs-collaborate to ensure that children with autism receive timely and personalized emotional support.**
 - **The Autism Support Jacket utilizes both technology and care to make life easier, happier, and to enhance the overall well-being of people with autism.**

BLOCK DIAGRAM



BUSSINESS MODEL

| | | | | |
|--|---|---|--|--|
| KEY PARTNERS • Healthcare Professionals: Partner with therapists, psychologists, and medical experts for endorsements. • Autism Support Organizations: Form partnerships to extend outreach within the autism community. • Manufacturers: Collaborate with manufacturers for scaled production of the Autism Support Jacket. • Retailers: Work with specialized retailers for distribution and sales. | KEY ACTIVITIES Research & Development: •Enhancing algorithms, UI, and sensor accuracy. Manufacturing & Quality: •Ensuring top-tier production and performance. Marketing & Promotion: •Creating awareness online and through events. KEY RESOURCES Expertise: •Skilled team for sensor integration and programming. Manufacturing: •Partnerships for scalable jacket production. Research & Development: •Continuous innovation for enhanced capabilities. | VALUE PROPOSITIONS •Advanced and compassionate response to emotional challenges in autism. •Real-time support with vital sign monitoring and comforting sensations. •Improving well-being and quality of life for individuals with autism and caregivers. | CUSTOMER RELATIONSHIPS Customer Support: •Responsive service for inquiries and concerns. User Community: •Online platform for sharing experiences and support. CHANNELS •E-commerce website for easy online purchasing. •Partnerships with specialized retailers. •Direct sales at autism and healthcare events. | CUSTOMER SEGMENTS •Families and caregivers of individuals with autism. •Special education institutions, therapy centers, and healthcare facilities. •Autism support organizations and advocacy groups. |
| RESEARCH AND DEVELOPMENT COSTS: Enhancing jacket capabilities. Manufacturing Expenses : Producing jacket components. Marketing & Distribution: Promoting and selling the product. | | REVENUE STREAMS Product Sales: Generating revenue through the sale of the Autism Support Jacket and related accessories. | | ENVIRONMENTAL BENIFITS Sustainable Manufacturing: •Eco-friendly practices to reduce environmental impact. Longevity and Durability: •Creating a lasting product, minimizing replacements. |
| ENVIRONMENTAL COSTS Manufacturing Impact : Materials, energy, and resources used. Transportation: Carbon footprint. | SOCIETAL COSTS Affordability: •Ensuring accessible pricing. User Training: •Providing effective technology support. | SOCIETAL BENIFITS •Improved emotional support, reducing stress and anxiety in individuals with autism. •Caregiver relief by easing emotional strain. •Enhanced inclusivity and quality of life for social participation. | | |

REVENUE GENERATION

1. Product Sales

- Direct Online Sales: Offering the Autism Support Jacket for purchase through wir accessible and user-friendly e-commerce platform.
- Collaborative Retail Partnerships: Partnering with specialized retailers to sell the jacket in physical stores or through their online channels .
- Offline Stores (Company Owned)

2. Bundled Packages

- Accessories and Add-ons: Crating bundles that include complementary accessories such as replacement parts, customization options, or caregiver guides.

3. Educational solutions and Organizations

- Bulk Sales: Offering discounted rates for educational institutions, therapy centres, and a support organization purchasing multiple jacket for their programs.

4. Customization and Personalization

- Premium Upgrades :Offering personalized customization options for the jacket design ,colors, and patterns for additional fee.
- Limited Edition Releases: Introducing special editions or collaboration with artists to attract collectors and enthusiasts.

5. Donations and Sponsorships

- Corporate Sponsorships: Partnering with socially responsible companies that share the mission of supporting individuals with autism, who may find jackets for underserved communities

6. Referral and Affiliate Programs:

- Caregiver Referrals: Establishing a terra program where caregivers can earn incentives for referring others to purchase the Autism Support Jacket .
- Affiliate Partnerships: Collaborating with autism-related websites, blogs, and influencers to promote the jacket and earn a commission on sales

7. Premium Customer Support and Maintenance Plans

- Premium Support Subscription: Offer customers the option to subscribe to a premium customer support plan that provides expedited assistance, personalized troubleshooting, and access to dedicated support channels.
- Maintenance and Repair Services : Provide maintenance and repair services for the Autism Support Jacket, allowing customers to extend the lifespan of the product and ensure its optimal functionality.

THE NEED IN SOCIETY

- ❑ Autism individuals face challenges with heightened emotions and anxiety, affecting well-being and functioning.
- ❑ Critical intervention required: timely and tailored emotional support for individuals with autism.



EXPECTED OUTCOMES

Reduced Anxiety and Insecurity: The Autism Support Jacket is expected to markedly alleviate anxiety and insecurity in individuals with autism through its personalized pulse monitoring and gentle, soothing pressure simulations. By addressing emotional challenges proactively, the jacket aims to enhance emotional well-being and promote a greater sense of security.

Enhanced Quality of Life: With its innovative technology, the Autism Support Jacket has the potential to elevate the overall quality of life for individuals with autism. By providing tailored support and comfort, the jacket aims to empower greater independence, boost confidence, and contribute to a transformative advancement in meeting the unique needs of autism patients.

RESOURCES AVAILABILITY

- **M30102 Pulse Monitoring Sensor**
- **ESP8266MOD Microcontroller**
- **Electronic Valves**
- **DC Pump**
- **Air Circulation System**
- **Fabric and Material for Jacket**
- **Remote Control**
- **Communication Module**
- **Power Source**



CONCLUSION

- ❑ Our Autism Support Jacket represents a revolutionary leap forward in addressing the challenges of anxiety and insecurity faced by individuals with autism.
- ❑ With its pulse monitoring and gentle pressure simulations, this innovative wearable embodies our commitment to enhancing emotional well-being, transforming the landscape of support, and empowering the lives of autism patients.
- ❑ Through proactive monitoring of vital signs and the generation of comforting sensations, our jacket stands as a beacon of hope, offering timely and personalized emotional support.
- ❑ Together, we embark on a journey to make a profound and positive impact on the quality of life for those we deeply care about.



