

Echo-Vision: Smart Assistive Technology

Venture Viability Analysis

Sri Sairam Engineering College, Chennai, Tamil Nadu

Echo-Vision: Smart Assistive Technology

Echo Vision, an AI-powered smart assistive device that helps visually and speech-impaired individuals

Sri Sairam Engineering College, Chennai, Tamil Nadu

Echo Vision is an AI-powered assistive technology designed to enhance the independence, safety, and confidence of visually impaired individuals.

It combines intelligent navigation, object and facial recognition, text-to-speech capabilities, and health monitoring into a seamless system that supports everyday mobility and interaction.

The project creates an affordable, inclusive solution bridging the gap between accessibility and innovation to empower users for connected, independent lives.

**ECHO VISION -
SMART ASSISTIVE
TECHNOLOGY FOR
THE VISUALLY
IMPAIRED**

Enhancing independence, safety, and confidence for the visually impaired



Venture Team



Name: Nandeesh S
Major: B.E - CSE (AI & ML)



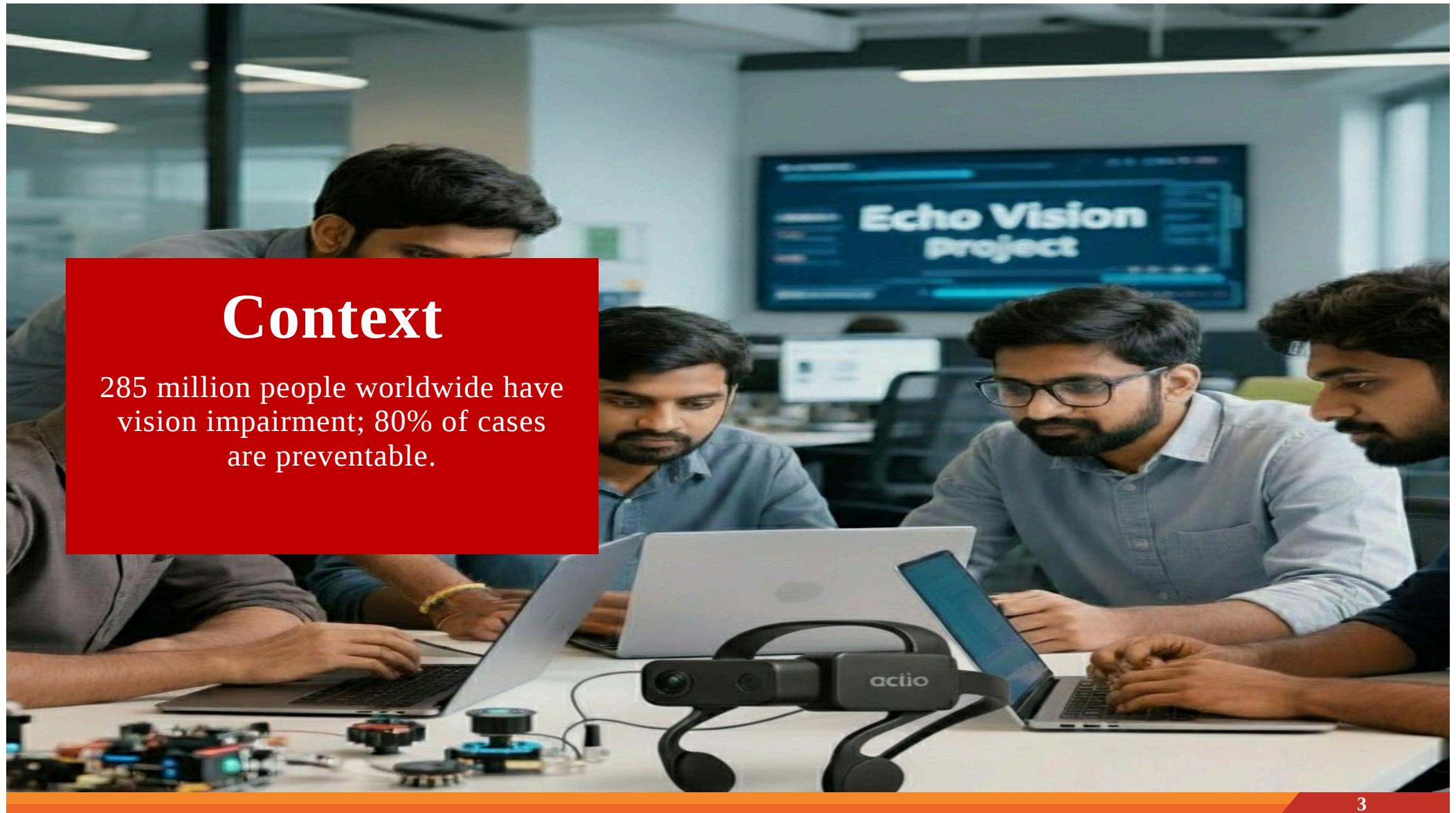
Name: Monesh D
Major: B.E - CSE (AI & ML)



Name: Madhan Sekar
Major: M.Tech - CSE

Context

285 million people worldwide have vision impairment; 80% of cases are preventable.



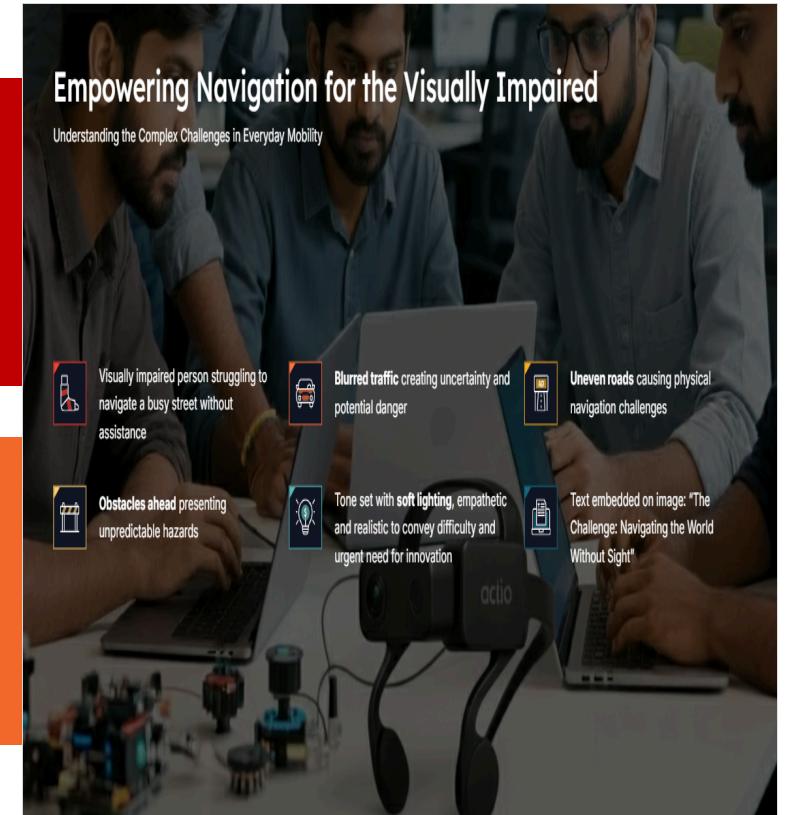
Problem Statement

Problem

Visually impaired individuals face challenges in navigation, recognizing people, and accessing printed or digital information independently.

Impact

Limited independence and mobility reduce quality of life for users, increase stress for families, and strain support organizations in providing effect



Problem Statement/Industry

Problem Being Solved

Visually impaired individuals face difficulties in navigating their environment, recognizing people, and accessing printed or digital information independently. Limited access to real-time assistance and health monitoring increases risks of accidents and social isolation, affecting their safety, mobility, and daily productivity.

Supporting Data

285 million people worldwide have vision impairment; 80% of cases are preventable.

Source: WHO – Vision Report 2023, IAPB – Global Statistics 2022



Area
Health



Industry
Pharmaceuticals,
Healthcare and Wellness



Domain
Telemedicine & Digital Health

Problem Analysis



Affected Stakeholders

Visually impaired individuals, their families, caregivers, and organizations supporting accessibility and inclusive technologies.



Impact on Stakeholders

Visually impaired users: Limited independence, safety risks, difficulty navigating and accessing information.
Families/Caregivers: Increased responsibility and stress for daily assistance. Support organizations: Challenges in delivering timely and effective aid or services.



Root Causes

Lack of affordable, real-time assistive technology. Limited integration of AI and sensor-based solutions for independent navigation. Insufficient awareness and accessibility infrastructure for visually impaired individuals.



Personal/Team Connect

As AI & ML enthusiasts, we are passionate about building intelligent systems that improve lives. EchoVision aligns with our vision to create impactful healthcare and accessibility solutions, combining technology with social purpose.

Target Customer Segments

Primary

Urban millennials aged 22–35 seeking affordable fitness and wellness solutions.

- 01 Visually impaired users confidently using Echo Vision smart glasses outdoors
- 02 A blend of technology and humanity, symbolizing empowerment.
- 03 Scenes of freedom, confidence, and emotional connection in daily life.
- 04 Moments of independence, learning, and joyful connection in everyday life

Empowering the Visually Impaired Our Users, Our Inspiration

Showcasing diverse users confidently navigating with Echo Vision smart glasses in bright daylight, highlighting independence and hope

Secondary

b2b forever

Customer Segment & Persona

Primary Segment

Urban millennials aged 22–35 seeking affordable fitness and wellness solutions.

Secondary Segment

b2b forever

Persona



SimbuVijay

Age in years: 19

Location: Small Town

Organizational Role: ML

Engineer

(if applicable)

Customer Profile



Education: High school pass out

Gender: Male

Occupation: Student

Interests/Hobbies: Travel

Primary Source of Information: News Apps

Shopping Preference: Hybrid

Comfort with Technology: Medium

Favourite Social Media: Instagaram,linkedin,narkuri

Favourite Offline Gathering Spots: tea shop

Jobs-to-be-Done

Functional JTBD



person who understand the libraries in ml
they can easily devolop the model

Emotional JTBD



ml engineer deliver a good model without
any fear

Social JTBD



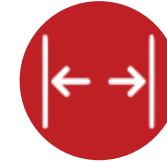
ML engineer get high salary after a good
experience

Current Alternatives



Current Alternatives

getting advice from his mentors



Gaps in Current Alternatives

low source of technical skills

Problem Validation (GOOTB)

Partial List of Potential Customers/Users Interviewed

Name: KABIL K

Occupation: STUDENT

Name: MOMO

Occupation: STUDENT

Name: NITHIN

Occupation: STUDENT

Problem Validation

Total customers/users interviewed:

- In-person: 5
- Virtually: 21

Total customers/users for whom this problem is important to solve: 2

Total customers/users who are dissatisfied with the current alternatives: 2

Our Solution



Solution

Echo vision empowering vision beyond sight

Core Technologies/ Methodologies

Raspberry Pi 5, NVIDIA Jetson Nano, Intel RealSense D435i, HC-SR04 Ultrasonic Sensors, MAX30102 Sensor, GPS, and AI/ML integration.

Solution Design



Our Solution

Echo vision empowering vision beyond sight



Key Features

AI-powered navigation, object and facial recognition, text-to-speech, health monitoring, SOS alerts, and multi-language voice assistant for the visually and speech-impaired.



Uniqueness

Combines multi-sensory AI assistance with full language support, affordable pricing, and integration of navigation, health, and communication in one compact device.

Solution Format:

Physical Product using AR/VR smart assistive glass

Core Technologies/ Methodologies:

Raspberry Pi 5, NVIDIA Jetson Nano, Intel RealSense D435i, HC-SR04 Ultrasonic Sensors, MAX30102 Sensor, GPS, and AI/ML integration.

Solution Benefits



Functional Benefits

Safe navigation, gesture-to-speech, face and object recognition, health monitoring.



Emotional Benefits

Boosts confidence, independence, and safety.



Social Benefits

Improves social interaction and community inclusion.



Macro Benefits

Empowers millions of visually impaired users, enhances accessibility, and promotes digital inclusion.

Competitors



Direct



SmartCane, BleeTech Smart Glasses, VisionAI
OrCam MyEye 3 Pro, Envision Glasses, WeWALK Smart Cane 2

Indirect

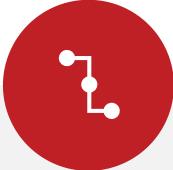


Google Lookout, Seeing AI, NAVCane
Be My Eyes, Aira, TapTapSee

Our UVP

Affordable AI assistive glasses empowering visual independence.

Competitors



Direct Competitors

SmartCane, BleTech
Smart Glasses, VisionAI



Indirect Competitors

Google Lookout, Seeing
AI, NAVCane



Direct Competitors Globally

OrCam MyEye 3 Pro,
Envision Glasses,
WeWALK Smart Cane 2



Indirect Competitors Globally

Be My Eyes, Aira,
TapTapSee

Macro Analysis

Favourable Trends

AREA	DESCRIPTION
Social	Smarter vision and speech tech for accessibility.
Technology	Rising demand for compact assistive devices.

Unfavourable Trends

AREA	DESCRIPTION
Technology	High hardware costs may limit affordability.
Other	Limited awareness slows adoption among users.

Data Sources:

GlobeNewswire Assistive Tech Report 2025, IMARC Group India Assistive Technology Market Report 2025.

Back-of-the-Envelope Financial Projections



Currency: Indian Rupee (INR)

Chosen Business Model: Deeptech/Biotech

AREA	YEAR 1	YEAR 2	YEAR 3
Revenues	190000	285000	456000
Total Expenses	119999	144000	180000
Profit	70000	141000	275996

Prototype

Prototype Format

Physical prototype designed as an AI assistive eyewear system, demonstrating real-time AI functional-

Functionality included in the Prototype

Core modules such as object and facial recognition, OCR-based text reading, obstacle detection, SOS alerts, and basic health monitoring.

Functionality NOT included in the Prototype

Non-essential components like cloud synchronization, mobile app connectivity, multilingual voice support, and data analytics are excluded at this stage.



{Upload another picture}

Prototype Validation

Number of users engaged with?

20

How many people liked or loved the prototype?

17

How many people were either neutral or mostly unhappy with the prototype?

2

Prototype Feedback

What aspects of the prototype did the users LOVE?

Users appreciated the accurate obstacle detection, clear voice guidance, and quick object recognition that enhanced mobility and confidence.

What aspects of the prototype were DISLIKED by the users?

Some users found the audio feedback slightly delayed and suggested a more compact, lightweight design for better comfort.

Competition Analysis

COMPETITOR NAME	TYPE	STRENGTHS	WEAKNESSES
Envision Glasses	Direct	strong global presence, and seamles	High cost, limited accessibility in
OrCam MyEye	Direct	Compact design, reliable OCR perfor	Expensive hardware, limited real-ti
Google Lookout	Indirect	Advanced AI, multilingual	limited access, privacy issues.
Seeing AI (Microsoft)	Indirect	Free, accurate recognition	weak in low light, limited offline

Our Product/Service will be better than the competitors' solutions because:

All-in-One – Combines navigation, object detection, OCR, and SOS in a single device. Offline AI Processing – Works without constant internet for faster, safer use. Affordable Accessibility

Market Size & GTM

GTM Channels

Digital

YouTube, Instagram, SEO, Google Ads.

Physical

Trade shows, flyers, events, sponsorships.



Source: GlobeNewswire, IMARC Group,
Market Research

Market Size

Total Addressable Market (TAM)

\$30B global assistive tech market

Serviceable Available Market (SAM)

Estimated at around \$3 billion annually

Serviceable Obtainable Market (SOM)

₹30 Cr in the first 2 years of operations.

Assumptions

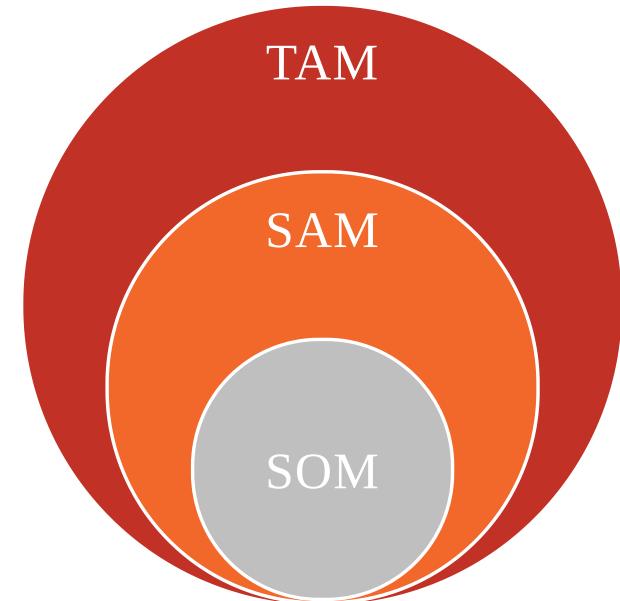
Focus on India and Southeast Asia, targeting urban visually impaired individuals with access to smartphones or connected devices.,

24997,

2

Sources of Research

GlobeNewswire, IMARC Group, Market Research



Revenue Models / Pricing

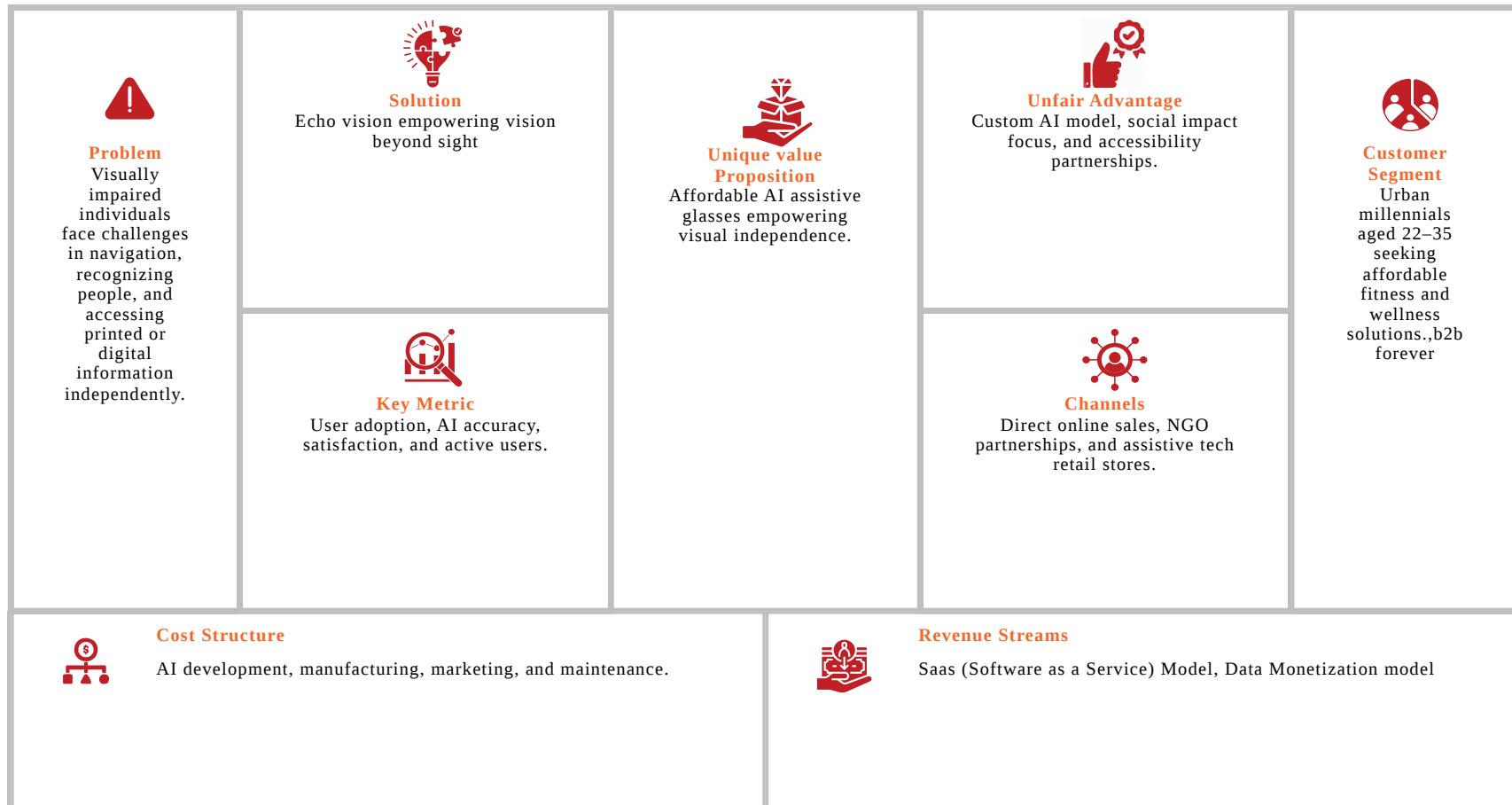
Revenue Model (Primary)

Saas (Software as a Service)
Model

Revenue Model (Secondary)

Data Monetization model

Lean Canvas



Go-to-Market Approach

Digital Marketing Channels
YouTube, Instagram, SEO, Google Ads.

Physical Marketing Channels
Trade shows, flyers, events, sponsorships.

Geographic Focus
Major Indian cities and urban regions.

Marketing KPIs
CAC, CLV, conversion rate, engagement growth.

Competitors' GTM
Strong in influencer and social media marketing; weak in offline engagement.

PRIMARY CUSTOMER SEGMENT
Urban millennials aged 22–35 seeking affordable fitness and wellness solutions.

UVP
Affordable AI assistive glasses empowering visual independence.

GTM Partners
NGOs, digital agencies, and campus ambassadors.

Sales & Customer Service

Customer Service

Website Live Chat & Chatbot (AI-based assistant for instant support), Email Support: support@echovision.ai, Phone Helpline: 24x7 customer care number

Distribution Channels

Direct online sales, NGO partnerships, and assistive tech retail stores.

Digital Sales Channels

YouTube, LinkedIn, Official Echo Vision Website, GeM, Amazon

Physical Sales Channels

Reliance Retail and Croma (through partnership tie-ups), NGOs supporting visually impaired communities, Assistive Technology Expos and Accessibility Conferences, Hospital and rehabilitation center

Sales KPIs

Revenue Growth: Monthly and quarterly tracking, Conversion Rate: Leads-to-purchase ratio from website and campaigns, Repeat Purchase Rate: Indicates customer trust and satisfaction

PRIMARY CUSTOMER SEGMENT

Urban millennials aged 22–35 seeking affordable fitness and wellness solutions.

UVP:

Affordable AI assistive glasses empowering visual independence.

GTM Partners

Digital – NPS, CSAT, Online surveys Offline – Feedback cards, Focus groups, Interviews, Follow-up calls

<https://echo-vision-71.web.app>

<https://drive.google.com/file/d/1QtS16WEHl3LsOLVwBRwFserG6pT8Hs94/view?usp=sharing>

Financials

Revenue Models/Streams

- SaaS (Software as a Service) Model
- Data Monetization model

Pricing

- **Unit of Sale:** One Echo Vision device
- **Selling price per unit:** ₹25000 per device

First Year Projections

Revenues: ₹3.2 Crore
(approx)

Operating Profits: ₹28–32 Lakh (approx)

Revenue Models / Pricing

Revenue Model (Primary)

Saas (Software as a Service)
Model

Unit of Sale

One Echo Vision device

Sale Price per Unit

₹25000 per device

Expected units to be sold in Year 1

100 units.

Expected growth in monthly sales

15% per month.

Costs & Revenues: Key Assumptions

	Heads	Type	Amount	Planning notes
REVENUES	Selling Price			
	Selling Price (per device)	Amount	25000	Price per Echo Vision device (AI navigation, OCR, sensors, 25000 Jetson/RPi, battery, casing)
VARIABLE COSTS	Production & Delivery Costs (per unit)			
	Cost of Raw Materials / License fees	Amount	20000	Components: Raspberry Pi/Jetson Nano, Intel RealSense, sensors, battery, casing, PCB, wiring
	Direct Labor Costs	Amount	2000	Assembly & testing per device
FIXED COSTS	Additional Costs	Amount	1000	Packaging, shipping, quality control per device
	Overheads and Salaries (Monthly)			
	Research and Development	Amount	60000	Monthly R&D for software/ML improvements & prototype testing
	Founder Salaries	Amount	40000	Small monthly stipend for founders
	Other Salaries	Amount	50000	Part-time engineers, hardware techs, testers
OTHER FIXED COSTS	Lab rental, Administration, Travel, and Others	Amount	30000	Office/lab rental, admin, travel, miscellaneous expenses
	Other Expenses (Monthly)			
FORECAST	Marketing & Advertising (includes: Agency cost & Sales/Marketing Salaries)	Amount	25000	Pre-order campaign, social media, ad creatives
	Sales Forecast			
INVESTMENT	Units Sold in Month #1	Items	100	Initial pre-order target
	Monthly Sales Growth Rate%	Percentag e	15	Expected growth as marketing and awareness increase
INVESTMENT	Capital Investments Setup costs (e.g., lab equipment/tools, IP fees, license fees)	Amount	400000	Lab equipment, tools, PCB prototyping, 3D printing, certifications, IP filings
	Bank loan for working capital	Amount	300000	Optional: small-scale working capital support
	Loan interest rate, per annum	Percentag e	10	Bank loan interest assumption
	Tax Rate	Percentag e	10	Corporate tax assumption for projections
	Depreciation rate, per annum	Percentag e	25	Electronics and hardware depreciation

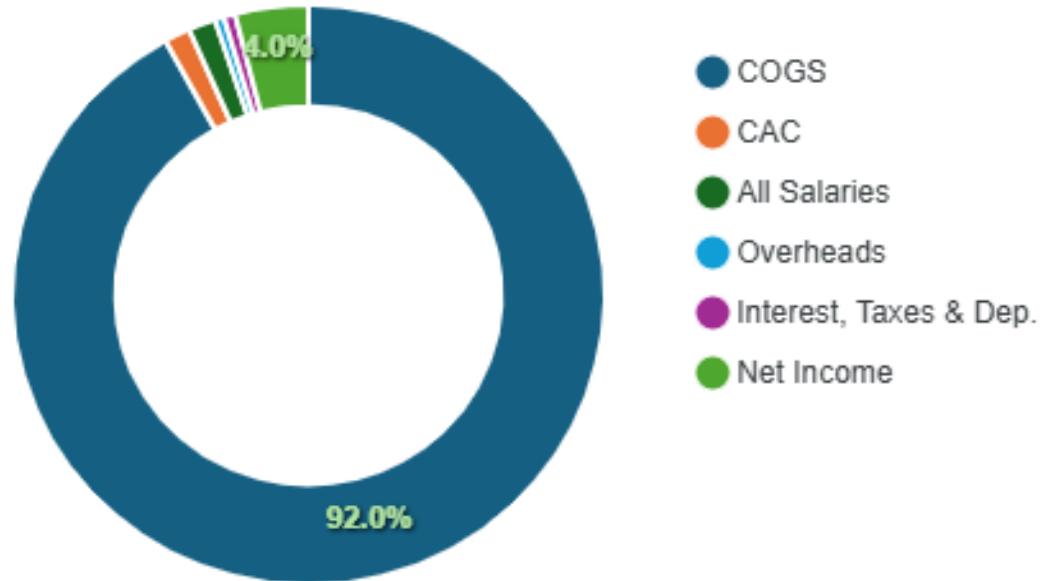
Profit & Loss Projections: Summary

	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Year Totals
Licences/Products Sold	100	115	132	152	175	201	231	266	306	352	405	465	2900
Revenues	2500000	2875000	3306250	3802188	4372516	5028393	5782652	6650050	7647557	8794691	10113894	11630978	72504168
Cost of Goods Sold	2300000	2645000	3041750	3498013	4022714	4626122	5320040	6118046	7035753	8091115	9304783	10700500	66703835
Gross Profit	200000	230000	264500	304175	349801	402271	462612	532004	611805	703575	809112	930478	5800333
Marketing & Advertising	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	25000	300000
R&D	60000	60000	60000	60000	60000	60000	60000	60000	60000	60000	60000	60000	720000
Founder Salaries	40000	40000	40000	40000	40000	40000	40000	40000	40000	40000	40000	40000	480000
Other salaries	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000	600000
Rent, Administration, Travel, and Others	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	30000	360000
Operating Profit	-5000	25000	59500	99175	144801.25	197271.4375	257612.1531	327003.9761	406804.5725	498575.2584	604111.5471	725478.2792	3340333
Machinery Depreciation	8333.333333	8333.333333	8333.333333	8333.333333	8333.333333	8333.333333	8333.333333	8333.333333	8333.333333	8333.333333	8333.333333	8333.333333	100000
EBIT	-13333	16667	51167	90842	136468	188938	249279	318671	398471	490242	595778	717145	3240333
Interest on loan	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	30000
Pre-Tax Income	-15833	14167	48667	88342	133968	186438	246779	316171	395971	487742	593278	714645	3210335
Provision for Taxes	0	1416.666667	4866.666667	8834.166667	13396.79167	18643.81042	24677.88198	31617.06428	39597.12392	48774.19251	59327.82138	71464.49459	322616.6807
Net Income	-15833.333333	12750	43800	79507.5	120571.125	167794.2937	222100.9378	284553.5785	356374.1153	438967.7325	533950.3924	643180.4513	2887718

Note: Taxes like GST are not included. All sales are net, after adjusting for returns/discounts.

Performance & Break-Even Analysis

Year 1 Revenues	Gross Profits for Year 1
₹3.2 Crore (approx)	₹64–70 Lakh (approx)
Net Profits for Year 1	Break-even Month
₹28–32 Lakh (approx)	7th Month



Next Steps

Goals for Months 10-12

Launch + marketing

Goals for Months 4-6

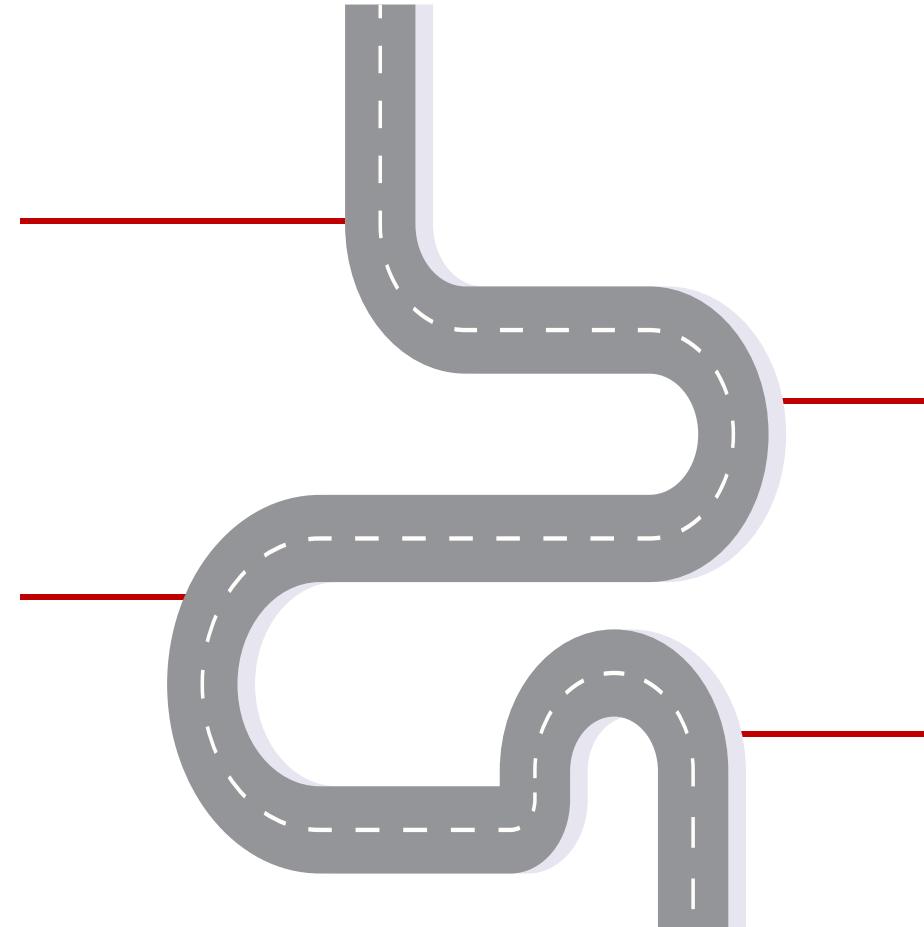
Improve prototype,
website

Goals for Months 7-9

Pilot test

Goals for Months 1-3

Prototype build



Venture Viability Assessment



Venture Viability Index

91.11%

Strengths

Our venture shows strong alignment with a large, growing market and addresses a clear customer need with a differentiated AI-based solution. The team possesses solid technical capabilities and remains highly committed to the mission, supported by a viable pricing model and encouraging financial potential.

Areas of Improvement

We need deeper customer validation, more refined financial assumptions, stronger marketing efforts, and faster prototype iteration to ensure smoother progress toward launch and market readiness.

Next Steps

TIMELINE	GOALS	TEAM NEEDED	PHYSICAL RESOURCES NEEDED	FUNDS NEEDED
Months 1-3	Prototype build	2	Components	₹1-1.5L
Months 4-6	Improve prototype, website	3	Hosting	₹2L
Months 7-9	Pilot test	1	Pilot unit	₹1L
Months 10-12	Launch + marketing	2	Demo units	₹3L

Venture Team



Name: Nandeesh S

University/College: Sri Sairam Engineering College

Major:B.E - CSE (AI & ML)

Key Skills: product design and ML dev

Role in the Venture: Founder & Lead Dev

Keen on continuing with the venture:

Yes



Name: Monesh D

University/College: Sri Sairam Engineering College

Major:B.E - CSE (AI & ML)

Key Skills: Hardware integration

Role in the Venture: Hardware co-lead dev

Keen on continuing with the venture:

Yes



Name: Madhan Sekar

University/College: Sri Sairam Engineering College

Major:M.Tech - CSE

Key Skills: product strategy & design

Role in the Venture: System tester

Keen on continuing with the venture:

Yes

Current Mentors:

Priya E

Mentors Needed in these Areas:

Hardware development and Prototype testing.

Venture Summary

OVERVIEW

We at Echo Vision are dedicated to empowering visually impaired individuals through intelligent, affordable, and multifunctional assistive technology. Our device integrates AI-powered navigation, object and facial recognition, health monitoring, and emergency support into one compact system. While we are currently refining our prototype, our commitment remains clear: to transform accessibility and improve the quality of life for millions worldwide.

Mission

Our mission is to empower visually impaired individuals with intelligent, affordable assistive technology that enhances independence, safety, and confidence in everyday life.

Social/Economic Relevance

Millions struggle daily due to limited accessibility and unsafe environments. Ensuring equal mobility and independence is essential for building an inclusive, dignified, and opportunity-rich society.



Thank You!

Our mission is to empower visually impaired individuals with intelligent, affordable assistive technology that enhances independence, safety, and confidence in everyday life.

Echo Vision is an AI-powered assistive technology designed to enhance the independence, safety, and confidence of visually impaired individuals.

It combines intelligent navigation, object and facial recognition, text-to-speech capabilities, and health monitoring into a seamless system that supports everyday mobility and interaction.

The project creates an affordable, inclusive solution bridging the gap between accessibility and innovation to empower users for connected, independent lives.



**ECHO VISION -
SMART ASSISTIVE
TECHNOLOGY FOR
THE VISUALLY
IMPAIRED**

Enhancing independence, safety, and confidence for the visually impaired