

Thadomal Shahani Engineering College
Bandra (W.), Mumbai- 400 050.

CERTIFICATE

Certify that Mr./Miss Shivash Shetty
of Comps Department, Semester II with
Roll No. 2103164 has completed a course of the necessary
experiments in the subject PCE-II under my
supervision in the **Thadomal Shahani Engineering College**
Laboratory in the year 2023 - 2024

P.S.
Teacher In-Charge

Head of the Department

Date 20th Oct '23

Principal

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COVER LETTER AND RESUME [Assignment No . 1]

BT

Draft a cover letter and resume for the post
of software Engineer in Microsoft

24 August , 2023

Kartik Shukla
The Hiring Manager
Microsoft Corporation
Santacruz, Mumbai - 400 098.

Subject : Job Application for Software Engineer

Dear Sir

I am Shirish Shetty , an engineering student of
Thadomal Shahani Engineering College, currently
studying in the final year. I am writing to express
my strong interest in the software engineer position
at Microsoft Corporation as advertised on LinkedIn.

Throughout the degree , I have consistently demonstrated
my commitment to inspiring my technical skills
and preparing for a career in software engineering.
My course work has provided me with a solid
foundation in areas such as OOP (Object-oriented

programming, data structure and Algorithms, software engineering principles and operating systems. In one of my recent group project, I was a key contributor to the development of dynamic blog website. I was responsible for creating layout of the website. I also collaborated with the backend team in integrating the website. What truly motivates me for this role is the prospect of leveraging my academic foundation, practical experience, and collaborative skills to contribute to Microsoft's legacy of innovation.

I am eager to contribute to the company's mission of pushing the boundaries of technology and making positive impact on global scale. I believe my contribution will be valuable for the company's growth. Thank you for considering my application.

Sincerely,

Shirish Shetty

Encl: Resume

SHIRISH SHASHIKANTHA SHETTY

+91 9867814079 shiroshetty30@gmail.com

EDUCATION

Sardamal Shahani Engineering College
 Bachelor of Engineering in Computer Engineering
 Jay College of Arts, Science and Commerce
 Higher Secondary School Certificate [HSC]
 Dalmia High School
 Indian Certificate of Secondary Education [ICSE]

CGPA 9.35/10
 Jan. 2022 - June 2025
GRADE 95.00
 Aug. 2019 - June 2021
GRADE 92.4
 Mar. 2019

TECHNICAL SKILLS

Technologies/Frameworks: HTML,CSS,JAVASCRIPT,NODEJS,EJS,EXPRESS,MONGODB,REACTJS,BOOTSTRAP
 Tools: Git, GitHub

PROJECTS

StackOverflow Clone [Reactjs, MongoDB, Nodejs, Expressjs]

Developed a functional StackOverflow clone, showcasing expertise in web development, database management, and user interaction. Added valuable experience in project design and implementation.

NodeJS Notes [HTML, CSS, JS, EJS, PASSPORT, ExpressJS]

Developed a comprehensive NOTES project utilizing HTML, CSS, JS, EJS, MongoDB, and integrated Google authentication with passport. This application efficiently manages user-generated notes, showcasing my proficiency in front-end and back-end technologies, database management, and OAuth integration. It exemplifies my practical skills.

CAMPING [HTML, CSS, JS, EJS, MAPBOX, CLOUDINARY]

A campground booking website allowing users to add campground on real time map. User can leave reviews on campground and upload images and rate them.

CODE COMPILER [HTML, CSS, JS, CODEMIRROR, NODEJS]

Developed a multi-language online compiler using CodeMirror, integrating C++, Python, Java, HTML, CSS, and JavaScript. Enabled real-time code editing and execution within a web environment, showcasing proficiency in web technologies and programming languages.

EXPERIENCE

WEB DEV INTERN, PRODIGY INFOTECH

PRESENT

Developed simple responsive pages, creation of javascript programs like tic tac toe, timer, personal portfolio etc.

WEB DEV INTERN, CodeClause

JUL 2023

Worked on simple chat application using Socket.io and also made Music player using js, html and css.

Backend Developer, Nullclass

Jun 2023

Worked as a Backend developer to create application like Stackoverflow

EXTRACURRICULAR

WEB DEVELOPMENT BOOTCAMP 2023

- certificate of completion Web development course from cult studio in udemy.
- learnt html, javascript, css, nodejs, ejs, mongodb etc.

Business and Marketing intern at Yesunity

March 2023

- A organization which provide internship to young students

SHORT PROPOSAL

Write short proposal for Blind AR
glasses.

~~for~~

SHORT PROPOSAL

[Assignment No. 2]

P.S.

Draft a Short Proposal for a smart IoT tool that is used to assist blind people

1. Introduction

BlindVision is a smart IoT gadget, meticulously crafted to assist those with visual impairment in their daily journeys. Leveraging the incredible capabilities of artificial intelligence (AI) and IoT, it acts as a trusted companion, providing real-time information about the world around them.

1.1 The Problem

Visual impairment is a significant and pervasive challenge that affects millions of people worldwide. For those who are visually impaired, everyday tasks that sighted individuals often take for granted, such as navigating public spaces, recognizing objects, and independently interacting with their environment, can be exceptionally challenging.

1.2 The Objective

The primary objective of the "BlindVision" project is to address this pressing issue and provide a technological solution that empowers visually impaired individuals to live more independently and confidently. Our aim is to develop an innovative IoT gadget that leverages artificial intelligence (AI) and IoT technologies to bridge the gap between visual impairment and everyday life.

1.3 Significance

The significance of the BlindVision project is multi-fold:

- Enhancing Independence: BlindVision will enable visually impaired individuals to gain a higher degree of independence by providing real-time information about their surroundings, helping them navigate with ease and confidence.
- Improving Safety: By detecting obstacles, hazards, and common objects in their path, BlindVision will significantly enhance the safety of visually impaired individuals, reducing the risk of accidents and collisions.
- Fostering Inclusivity: BlindVision aligns with the principles of inclusivity and accessibility, ensuring that visually impaired individuals can actively participate in various aspects of society, from education to employment and beyond.
- Advancing Technology: The project represents a leap forward in the application of cutting-edge AI and IoT technologies for the betterment of society, showcasing the potential for technology to positively impact the lives of those with disabilities.
- Community Empowerment: BlindVision is not just a device but a means of empowerment. It recognizes the potential of the visually impaired community and provides them with tools to unlock opportunities and overcome barriers.

By addressing the problem of visual impairment with a solution that combines innovation, practicality, and inclusivity, BlindVision has the potential to transform the lives of countless individuals and contribute to a more equitable and accessible world.

2. Plan

Phase 1: Project Initialization

1.1 Project Kickoff:

- Assemble the project team, including experts in machine learning, computer vision, software development, and accessibility.
- Define roles and responsibilities within the team.

1.2 User Needs Assessment:

- Conduct interviews and surveys with visually impaired individuals to understand their specific needs and preferences for the AI glasses.

1.3 Regulatory and Ethical Considerations:

- Research and identify regulatory requirements and ethical considerations for assistive devices for the visually impaired.

1.4 Infrastructure Setup:

- Set up the necessary development environment, hardware, and software tools for AI model development.

Phase 2: Data Collection and Preprocessing

2.1 Sensor Data Gathering:

- Collect data from the sensors, including cameras and microphones, to understand the environment and user inputs.

2.2 Data Cleaning and Annotation:

- Clean and preprocess sensor data, addressing noise and inconsistencies.
- Annotate data for object recognition and user interaction patterns.

Phase 3: Model Development

3.1 Algorithm Selection:

- Experiment with various machine learning and computer vision algorithms suitable for object detection and recognition.

3.2 Object Detection Models:

- Develop object detection models to identify and classify objects in the user's surroundings.

3.3 Speech Synthesis Integration:

- Integrate text-to-speech (TTS) technology to convert recognized objects into auditory feedback.

Phase 4: User Interface and Application Development

4.1 Frontend Development:

- Design and develop a user-friendly interface for the AI glasses.
- Consider accessibility features such as voice commands and tactile feedback.

4.2 Backend Development:

- Build backend systems to process sensor data, run AI models, and manage user interactions.

4.3 Integration:

- Integrate the object detection and speech synthesis modules into the AI glasses.

Phase 5: Real-time Feedback and Updates

5.1 Real-time Object Recognition:

- Implement real-time object recognition to provide immediate feedback to the user.

5.2 Cloud Connectivity:

- Establish connectivity to the cloud for updates, improvements, and remote support.

Phase 6: Testing and Optimization

6.1 Usability Testing:

- Conduct extensive usability testing with visually impaired individuals to refine the user experience.

6.2 Performance Optimization:

- Fine-tune the object recognition models for accuracy and speed.
- Optimize the user interface for ease of use.

Phase 7: Deployment and Monitoring

7.1 Deployment:

- Deploy the AI glasses for pilot testing with a limited user group.

7.2 Monitoring and Maintenance:

- Implement monitoring and logging to track system performance and user feedback.
- Provide regular updates and bug fixes based on user input.

Phase 8: Documentation and Conclusion

8.1 Documentation:

- Prepare comprehensive documentation detailing the AI glasses' functionality, development process, and user instructions.

8.2 Training and Support:

- Provide training to users and caregivers on how to use the AI glasses effectively.
- Establish a support system for addressing user inquiries and issues.

8.3 Final Evaluation:

- Conduct a final evaluation of the AI glasses' success in meeting the needs of visually impaired users and achieving project objectives.

3. Schedule

Phase	Task
Phase 1: Project Planning (2 months)	<ul style="list-style-type: none">- Project Initialization
	<ul style="list-style-type: none">- Research and Requirements Gathering
	<ul style="list-style-type: none">- Hardware Selection and Procurement

Phase 2: Development (4 months)	<ul style="list-style-type: none">- Software Architecture Design- Software Development- Machine Learning Model Development- ML Model Refinement
Phase 3:- Sensory Data Processing and User Interface (2 months)	<ul style="list-style-type: none">- Sensory Data Processing Development- User Interface Development- Feedback Mechanisms
Phase 4:- Testing and Validation (6 weeks)	<ul style="list-style-type: none">- Prototype Testing- Pilot Testing- Finalization and Regularity Compliance

	- Optimization
Phase 5: Deployment and Maintenance	- Deployment
	- Ongoing Maintenance
	- Monitoring
Phase 6: Project Conclusion	- Documentation
	- Training

4. Resources

4.1 Human Resources:

- Skillset: Building AI glasses for the visually impaired requires a multidisciplinary team. Machine learning experts can develop and fine-tune algorithms for object recognition. Computer vision specialists can work on image analysis and processing. Software developers, particularly those skilled in Python, will be responsible for creating the software that integrates with the hardware. Additionally, UX/UI designers can ensure a user-friendly interface, and accessibility experts can help make the device usable for people with various needs.
- User Engagement: Actively involving blind or visually impaired individuals in the development process is essential. Their insights and feedback are

invaluable for tailoring the technology to their specific needs. Regular user testing can help identify usability issues and ensure that the glasses are intuitive and genuinely helpful.

4.2 Software and Hardware Resources:

Hardware Components:

- Camera: The choice of camera is crucial. High-resolution cameras with good low-light performance can provide detailed imagery for object recognition.
- Processing Power: A powerful processor, like a Raspberry Pi or a specialized AI chip, is needed to run machine learning models efficiently. The speed of processing impacts the glasses' ability to recognize objects in real-time.
- Audio Input and Output: Microphones capture environmental sounds and user commands, while speakers deliver auditory feedback. High-quality audio components are essential for clear communication with the user.
- Power Source: A long-lasting, rechargeable battery is critical to ensure that the glasses can be used throughout the day without frequent recharging.
- Sensor Suite: Additional sensors, such as accelerometers and gyroscopes, enhance the glasses' functionality. These sensors can be used for detecting orientation changes and providing information about the user's movement.
- Connectivity Options: Internet connectivity options (such as Wi-Fi or cellular) enable access to cloud resources for real-time updates and improvements. They also allow for remote support and data sharing.

Software Development:

- **Machine Learning Models:** Machine learning models for object detection and image recognition should be carefully chosen or developed. Training and fine-tuning these models require extensive datasets and expertise in the field.
- **Speech Synthesis:** Implementing text-to-speech (TTS) technology involves selecting appropriate TTS engines and integrating them into the software. Natural and clear speech synthesis is crucial for effective communication.
- **User Interface:** The user interface should be intuitive and easy to navigate, even for individuals with limited or no vision. Consider using audio or haptic feedback for interaction.
- **Mobile Application:** The companion mobile app should allow users to customise settings, update firmware, and provide remote support. It should also be accessible and user-friendly.
- **Firmware:** Developing firmware to manage hardware components and software integration is a critical aspect. This ensures that the glasses function seamlessly and reliably.
- **Data:** Gathering and curating a substantial dataset is essential for training and fine-tuning machine learning models. This dataset may include a wide range of objects and scenarios to improve object recognition accuracy.
- **Funding:** Developing hardware and software can be costly. Seek funding through grants, investors, or crowdfunding to cover research, development, and manufacturing expenses.

In summary, creating AI glasses for the visually impaired is a complex endeavour that involves a combination of technical expertise, user-centred design, regulatory

compliance, and ethical considerations. Engaging with users and forming collaborative partnerships are key to developing a solution that truly meets the needs of the visually impaired community.

5. Budget

Category	Item	Estimated cost(INR)	Details
Research and Development	Feasibility Study	50,000	Research and analysis of existing technologies and solutions.
	Prototype Development	300,000	Building functional prototypes for testing and refinement.
Hardware	Smart Glasses Components	500,000	Sensors, cameras, processors, and other electronic parts.
	Inbuilt Speakers	20,000	High-quality speakers for auditory alerts and guidance.

Software Development	AI Algorithms Development	200,000	Developing AI models for object detection and navigation.
	System requirements	50,000	Deciding the system requirements
	Software Integration	100,000	Integrating AI algorithms with the hardware.
Testing and Quality Control	Testing and Evaluation	100,000	Rigorous testing to ensure the glasses work as intended.
Manufacturing	Production Setup	200,000	Setting up a small-scale production facility.
	Initial Production Run	500,000	Manufacturing the first batch of AI glasses.
Marketing And Distribution	Marketing And Promotion	100,000	Promoting the product through various channels.
	Distribution Channels	50,000	Establishing partnerships for distribution.

Miscellaneous	Contingency (10% of Total)	218,200	A buffer for unexpected expenses and adjustments.
	Legal And Regulatory	50,000	Ensuring compliance with relevant laws and regulations.
	Documentation and Manuals	30,000	Creating user guides and product manuals.
Total Estimated Budget		2,198,200 INR	The total estimated budget for the project.

6. Conclusion

- Our "Blind Vision" glasses project represents a visionary endeavour set to transform the lives of the blind and visually impaired in a profound way. It goes beyond a conventional eyewear solution; it is a comprehensive and groundbreaking approach to enhancing the everyday experiences of individuals who have visual impairments.
- Our journey of research and development has culminated in the creation of a robust and user-friendly wearable technology that offers real-time insights into the world for visually impaired users. By harnessing the power of cutting-edge technology such as artificial intelligence and machine learning, we aim not only to enhance their decision-making but also to contribute to a more transparent and accessible world.

- The potential impact of "Blind Vision" extends far and wide, touching various aspects of life. From navigating streets with confidence to experiencing a more inclusive digital world, our glasses promise to empower individuals in countless ways. Whether it's recognizing objects, reading text, or providing audio-guided directions, "Blind Vision" simplifies tasks, ultimately saving valuable time and money.
- Our unwavering commitment to ethical data practices, security, and privacy sets a high standard in the industry. We understand the paramount importance of safeguarding sensitive information and maintaining the trust of our users. "Blind Vision" is designed with user safety and privacy at its core.
- As we progress with the implementation of "Blind Vision," we anticipate further refinements, enhancements, and collaborations. We invite industry partners, accessibility advocates, and the wider user community to join hands with us in shaping the future of assistive technology for the visually impaired.
- In conclusion, "Blind Vision" is not just a product; it's a vision for a world where visual impairment is no longer a barrier to independence and exploration. By bringing together innovation, compassion, and technology, we aspire to create an inclusive ecosystem that empowers individuals with visual impairments and fosters a more accessible and understanding society.

MEE TING DOCUMENTATION
Notice & Agenda
Assignment No:

P.D.

Draft a Notice and Agenda for the First meeting of TSEC TechNec to be held on September 11, 2023 for the upcoming Escape room event.

THADOMAL SHAHANI ENGINEERING COLLEGE
W.P.G Kher Marg, TPS III, Bandra(W)
Mumbai - 400050
Ph. 26495808, Email : gtthampi@gmail.com

September 8, 2023

NOTICE

This is to inform you that the first Meeting of the TSEC TechNex will be held on Thursday, September 11 2023 at 10:00am in room no 306 old building. The agenda is attached

Maithili Shinde

Secretary

THADOMAL SHAHANI ENGINEERING COLLEGE
WPG . Kher Marg , TPS III , Bandra(W)
Mumbai - 400050
Ph . 26495808 , Email : gtthampi@gmail.com

September 8, 2023

AGENDA

- 1.01 To strategize the flow of rounds of the Escape room event.
- 1.02 To discuss the platform and data and time of the event.
- 1.03 Going through the duties allocated to everyone
- 1.04 To discuss the sponsorships of the event.
- 1.05 To discuss the publicity of the event.
- 1.06 Date for the next meeting.
- 1.07 Any other matter with the permission of the chairperson.
- 1.08 Vote of Thanks

Maithili Shinde

Secretary.

MEETING DOCUMENTATION

Assignment No.:

Draft the Minutes for the First Meeting of the Dev Guru committee held on August 10, 2023 for upcoming event of Code to Flex Hackathon of TSEC

B✓

MEETING DOCUMENTATION

Assignment No:

Draft the Minutes for the First Meeting of the Dev Guru committee held on August 10, 2023 for upcoming event of Code to Flexi Hackathon of TSEC

b✓

THADOMAL SHAHANI ENGINEERING COLLEGE

August 10, 2023

Minutes of the First Meeting of the Dev Guru committee held on Thursday, August 10, 2023 at 8:00 am in room no 306 old building.

Present : Shreyansh Jain Chairperson
Saurav Jagmalani Creative Head
Harsh Gurnasinghani Event Manag. Head
Anisha Jain Marketing Head
Varun Jajoo Technical Head
Dimple Humane Publicity Head
Jitesh Leyga Logistics Head

In attendance : Monumayee Ingle Secretary

1.01 Overview of Hackathon

The event date and theme have been decided for the upcoming hackathon. The organizing team successfully determined September 10, 2023 as official date for the Hackathon. This decision takes into consideration factor such as participant availability and coordination with potential sponsors.

1.02 Deciding the format of the Hackathon

Based on opinions of all the Heads present in the meeting, it was decided to have diverse domains ranging from sustainable technology solution to healthcare innovations. The duration of event was decided to be of 24 hours and hybrid mode was considered.

1.03 Formatting the domains for problem statements

It was decided to keep the theme of hackathon as 'Social Welfare'. The members decided to NGOs problem as problem statements for the hackathon. The judging criteria was also discussed and later confirmed that authorities from different NGOs would be judging the teams for this event.

1.04 Analysing the Software or Hardware Requirements

Based on the opinion of logistics head, it was decided to have halls of 2nd and 3rd floor as the venue of the hackathon. No hardware requirement were confirmed. Standard requirements like WiFi connection, computers, Ethernet were taken into consideration.

1.05 Deciding the budget for the event.

During the hackathon went meeting, the point of discussion pertained to finalizing budget for the event. The budget allocation was thoroughly addressed, and estimated nearly around 1 lakh 20 thousand which encompassed provision for food, refreshment as well as prize pool.

1.06 Suggesting Promotional Strategies for the event.

Various promotional strategies were suggested by marketing Head. Marketing Head suggested to approach previous sponsors. Tying up with Tech and Edutech platform were also considered. During this, ₹300 was decided as registration fee. Collaboration with Tech influencers and holding webinars were also decided.

1.07 Any other matter with permission of chairperson.

With the permission of chairperson, the creative Head requested to have an idea for the creatives that would be used to promote the event.

1.08 Vote of Thanks

The chairperson gave the vote of Thanks to all the members present and concluded the meeting.

Secretary

August 10, 2023

8:00 am

Chairperson

August 10, 2023

8:00 am

TECHNICAL PAPER

Write Technical paper on Blind Vision
AR glasses.

~~Top~~

BlindVision: AI Powered Glasses

Sagar Singh

Computer Engineering Department
Thadomal Shahani Engineering College
Mumbai, India
sagar.singh@tsecedu.org

Sanford Shilesh

Computer Engineering Department
Thadomal Shahani Engineering College
Mumbai, India
sanford.shilesh@tsecedu.org

Shirish Shetty

Computer Engineering Department
Thadomal Shahani Engineering College
Mumbai, India
shirish.shetty@tsecedu.org

Trishala Singhavi

Computer Engineering Department
Thadomal Shahani Engineering College
Mumbai, India
trishala.singhavi@tsecedu.org

Adarsh Shukla

Computer Engineering Department
Thadomal Shahani Engineering College
Mumbai, India
adarsh.shukla@tsecedu.org

Maithili Shinde

Computer Engineering Department
Thadomal Shahani Engineering College
Mumbai, India
maithili.shinde@tsecedu.org

Abstract—Blind Vision Smartglasses project tackles the challenges faced by the visually impaired by introducing cutting-edge blind-assistive smart glasses. The problem revolves around the limited spatial awareness impeding the independence of visually impaired individuals. The sophisticated methodology integrates state-of-the-art computer vision, machine learning, and natural language processing to enable instantaneous object recognition and provide detailed auditory descriptions. The results present a functional prototype featuring high-resolution cameras, powerful processing units, and an optional overlay display. The real-time object recognition achieves exceptional accuracy, delivering comprehensive environmental descriptions. With a battery life meeting daily usage needs, user testing affirms a notable positive impact on spatial awareness and independence. In conclusion, the successful integration of advanced hardware components underscores the potential of assistive technology to address the distinctive needs of the visually impaired. Ongoing user feedback and iterative refinement are imperative for optimizing the user experience and ensuring widespread acceptance within the visually impaired community, marking a significant stride in advancing assistive technology for enriched daily living.

cutting-edge technologies to address the unique challenges faced by the visually impaired. Existing solutions often lack the sophistication and real-time adaptability required to provide meaningful assistance across diverse environments and situations. The gap between the capabilities of assistive technologies and the needs of visually impaired individuals persists as a significant problem.

C. Motivation and Significance

The motivation behind this research lies in the transformative potential of AI and IoT technologies. Artificial Intelligence (AI) can provide advanced object recognition and contextual understanding, while the Internet of Things (IoT) can enable seamless connectivity and access to valuable data sources. By harnessing these technologies in the form of smart AI and IoT-based glasses, we aim to bridge the aforementioned gap and empower individuals with visual impairments to navigate the world with greater confidence and independence.

The significance of this research extends beyond technological innovation. It directly addresses a pressing societal issue by enhancing the daily lives of individuals with visual impairments. By providing real-time assistance, augmenting sensory perception, and facilitating connectivity, our smart glasses project seeks to contribute to a more inclusive and accessible world.

D. Objectives and Scope

The primary objectives of this research are as follows:

- To design and develop AI and IoT-based glasses capable of real-time object recognition and scene description.
- To create an intuitive and user-friendly interface for interaction, enabling gesture and voice commands.
- To establish seamless connectivity with IoT-enabled devices and services, such as GPS navigation systems.

I. INTRODUCTION

A. Background and Context

Visual impairment is a prevalent and life-altering condition that affects millions of individuals worldwide. For those living with blindness or severe visual impairments, everyday tasks that sighted individuals often take for granted can be challenging or even insurmountable. In this context, the field of assistive technology has emerged as a powerful force for enhancing the independence and quality of life of individuals with visual impairments.

B. Problem Statement

Despite advancements in assistive technologies, there remains a need for innovative solutions that seamlessly integrate

- To evaluate the performance and usability of the smart glasses through user trials and assessments.

The scope of this research encompasses the design, development, and evaluation of the smart glasses system. While the focus is on the technical aspects, we also consider the broader implications of assistive technology adoption by individuals with visual impairments.

II. SYSTEM ARCHITECTURE

Imagine a world where visual impairment is no longer a barrier to experiencing the richness of life's moments. In this section, we unveil the intricate tapestry that is the architecture of our AI and IoT-based glasses—an embodiment of empowerment for those with visual challenges.

These glasses are not just a piece of wearable technology; they are a testament to the fusion of innovation and compassion. By seamlessly blending advanced hardware and software components, we aim to redefine the boundaries of assistive technology. Through this architectural masterpiece, we offer users the gift of real-time assistance, a heightened sense of awareness, and the freedom to explore their surroundings with confidence.

This section provides an illuminating overview of the system's blueprint, revealing the synergy of its critical components and their harmonious interplay. It is here that we embark on a journey into a world of possibilities, where AI and IoT converge to create a vision of independence and inclusion for the visually impaired.

A. Overview of Hardware and Software Components

- High-Resolution Camera with Object Recognition:** A high-resolution camera, mounted on the glasses' frame, captures real-time visual data. It employs advanced object recognition algorithms, enabling the glasses to instantly identify and describe objects in the user's environment. This visual perception is at the core of the glasses' ability to provide meaningful assistance.
- Bone-Conduction Audio System:** Unlike conventional speakers, our glasses utilize a bone-conduction audio system that transmits sound as vibrations directly to the user's inner ear. This technology ensures that users receive auditory feedback discreetly, allowing them to stay aware of their surroundings while receiving important information.
- Lightweight and Ergonomic Design:** The glasses have been meticulously designed with user comfort in mind. Their lightweight and ergonomic design not only ensures that users can wear them comfortably for extended periods but also recognizes the unique needs of individuals with visual impairments who may rely on the glasses throughout the day.
- Embedded Microcontroller Unit (MCU):** An embedded MCU forms the computational brain of the glasses. It

processes the visual data captured by the camera and runs real-time computer vision algorithms. This local processing minimizes latency and enables the glasses to provide instant object recognition and descriptions, enhancing the user experience.

- Rechargeable Battery:** To support uninterrupted usage, the glasses are equipped with a high-capacity rechargeable battery. Effective power management is crucial to ensure that users can rely on the glasses for their daily assistance needs.
- Connectivity Modules (Wi-Fi and Bluetooth):** Wi-Fi and Bluetooth connectivity modules are integrated into the glasses, enabling them to establish connections with other devices and the internet. These modules are pivotal for IoT integration, facilitating real-time data transmission to the cloud for further processing and remote access, such as GPS navigation.
- Software Components:** Computer Vision Algorithms: These sophisticated algorithms analyze images captured by the camera. They employ object detection and recognition techniques to identify and describe objects and scenes in the user's environment, providing valuable context.
 - Computer Vision Algorithms: Detect and describe objects in the user's environment.
 - Natural Language Processing (NLP): Allows voice-based interaction.
 - IoT Middleware: Facilitates communication with external devices and cloud services.
 - User Interface (UI): Gesture and voice commands for ease of use.
 - Mobile Application: Customization and remote control for users.

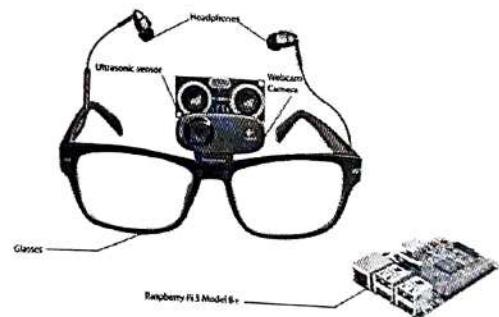


Fig. 1. AI Glass Components

III. OBJECT DETECTION AND RECOGNITION

A. Object Detection and Recognition Algorithms

- Object Detection Algorithm: YOLO (You Only Look Once):** YOLO is an advanced object detection algorithm that swiftly identifies objects within an image. It achieves

this by dividing the image into a grid and simultaneously predicting object boundaries and their types. This approach ensures real-time detection with exceptional accuracy, making it ideal for our glasses' quick response to the user's surroundings.

- Object Recognition Algorithm:** Modified ResNet : Object recognition is the process of labeling detected objects. Our glasses employ a deep learning model based on a modified ResNet architecture. This model, initially trained on a diverse dataset, can be fine-tuned to recognize objects commonly encountered in the user's environment. This fine-tuning enables precise recognition and enhances the glasses' utility.

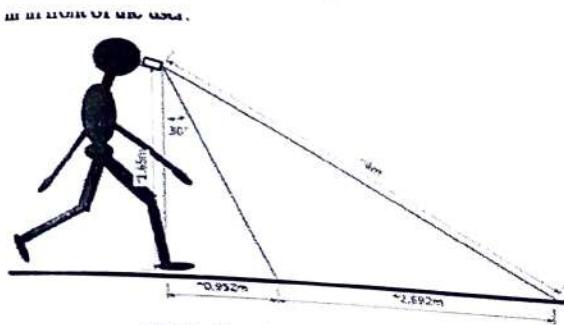


Fig. 2. Detection through Glasses

B. Real-Time Object Identification by the Glasses

- Camera and Sensory Input:** The glasses are equipped with a high-resolution camera discreetly integrated into the frame. This camera captures the user's surroundings, providing a continuous stream of visual data for processing.
- Image Processing :** Real-time object detection is achieved through the embedded microcontroller unit (MCU). The MCU utilizes the YOLO algorithm to divide incoming image frames into a grid, predicting object boundaries and types within each grid cell. This parallel processing ensures swift and accurate object detection.
- Object Recognition :** Upon object detection, our glasses employ the modified ResNet-based recognition model. This deep neural network assigns meaningful labels to detected objects, enhancing the user's understanding of their surroundings.
- Audio Feedback :** To provide information discreetly, the glasses utilize a bone-conduction audio system. This technology conveys audio feedback as vibrations directly to the user's inner ear, allowing them to stay aware of their surroundings while receiving crucial information.
- User Interaction :** Interaction with the glasses is intuitive and user-friendly. Users can effortlessly inquire about recognized objects through natural voice commands or simple gestures. The glasses respond promptly, enriching the user's situational awareness and promoting independence.

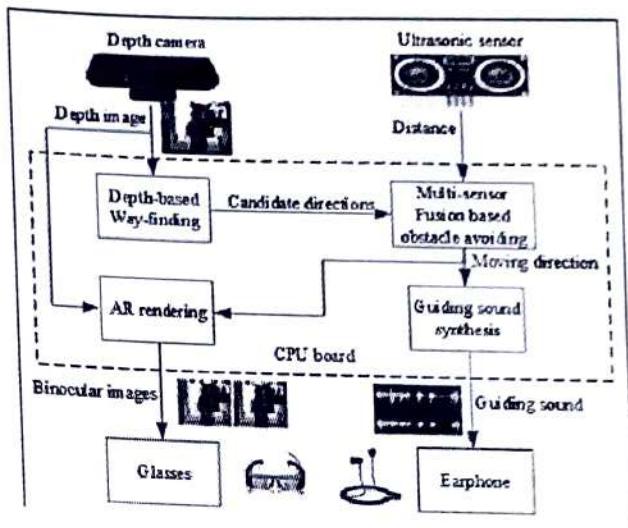


Fig. 3. Working of Object Detection

IV. TEXT DOCUMENT HANDLING

The glasses are equipped with advanced Optical Character Recognition (OCR) technology to handle and process text documents. Here's a breakdown of the process:

A. How Glasses Handle Text Documents

- Capture:**
 - The glasses use an integrated camera or sensors to capture the visual information from the user's surroundings.
 - When directed toward a text document, whether it's a printed page or a digital display, the camera captures an image of the text.
- OCR Processing:**
 - The captured image is then processed using OCR algorithms.
 - Optical Character Recognition is a technology that converts different types of documents, such as scanned paper documents, PDFs, or images captured by a digital camera, into editable and searchable data.
 - OCR specifically recognizes and extracts the characters (letters, numbers, symbols) from the image.
- Text Extraction:**
 - The OCR algorithm identifies the characters and words in the captured image and converts them into machine-readable text.
 - This extracted text is then ready for further processing.

B. OCR Technology Used

Optical Character Recognition (OCR) is a crucial component of the glasses' functionality. The OCR technology employed in VisionAssist is designed to accurately and swiftly

recognize text from various sources. Here's an overview of the OCR technology used:

- **Image Preprocessing:**

- Before OCR processing begins, the captured image may undergo preprocessing steps to enhance the quality of the image.
- This could involve adjusting contrast, brightness, or removing background noise to improve OCR accuracy.

- **Character Recognition Algorithms:**

- OCR relies on sophisticated algorithms to recognize and interpret characters within the image.
- These algorithms are trained to identify patterns, shapes, and structures that represent letters, numbers, and symbols.

- **Language Support:**

- OCR technology supports multiple languages, allowing the glasses to process and understand text in diverse linguistic environments.
- This feature enhances the inclusivity of the device for users across different regions and cultures.

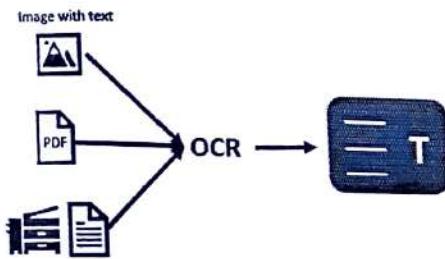


Fig. 4. Text to Speech Conversion

- **Text to Speech (TTS) ENGINE – Google Text-to-Speech**

- A Text-to-Speech (TTS) engine is a software component that converts written text into spoken words or synthetic speech.
- Google Text-to-Speech (TTS) is a sophisticated technology that converts written text into spoken words using natural-sounding synthetic speech.
- The process involves several steps, combining linguistic analysis, phonetics, and audio synthesis.
- Google Text-to-Speech works by analyzing input text, processing it phonetically, considering linguistic context, selecting a suitable voice, incorporating prosody, and synthesizing natural-sounding speech.
- The resulting audio output provides an accessible and engaging way to convey information for various applications and users.
- Developers can leverage the TTS API to integrate this functionality into their projects.

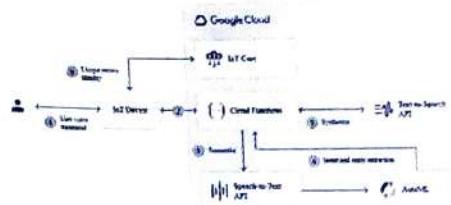


Fig. 5. Google TTS Engine

- **Speech Synthesis – Parametric Synthesis**

Speech synthesis, also known as Text-to-Speech (TTS), involves the generation of artificial speech from written text. Over the years, various techniques have been developed to achieve high-quality and natural-sounding synthetic speech. Here are some key speech synthesis techniques:

- Parametric synthesis involves generating speech based on a set of parameters that describe the characteristics of the speech signal.
- These parameters can include pitch, duration, and spectral information.
- Statistical model named Hidden Markov Models (HMMs), is used to predict these parameters from linguistic features.

V. USER INTERFACE

Our innovative glasses for the visually impaired feature an intuitive user interface designed for simplicity and ease of use, ensuring that blind users can interact effectively with the system. The user interface leverages a combination of tactile and auditory elements while maintaining comfort and lightweight design for prolonged use.

- **Voice Commands:**

- The glasses are equipped with advanced speech recognition technology that allows users to interact with the system using natural voice commands.
- Users can initiate commands such as "What's in front of me?" to obtain real-time information about their immediate environment.
- The glasses respond with clear and concise auditory feedback, providing descriptions of objects, people, or text within view.

- **Tactile Buttons:**

- Tactile buttons are strategically placed on the glasses for easy access and navigation.
- These buttons enable users to access menus, adjust settings, and initiate specific functions through touch, enhancing the overall user experience.

- **Bone Conduction Audio:**

- The glasses employ bone conduction technology for audio feedback, ensuring that information is delivered discreetly and directly to the user's inner ear.
- This technology eliminates the need for traditional headphones, allowing users to stay connected with their surroundings while receiving vital information.

• Haptic Feedback:

- To provide users with additional sensory cues, the glasses feature haptic feedback mechanisms.
- These mechanisms generate subtle vibrations or tactile sensations to convey information about system responses and menu navigation, enhancing the user's understanding and control.

VI. IOT INTEGRATION

How the Glasses Connect to the Internet of Things: The glasses seamlessly integrate with the Internet of Things (IoT) ecosystem, expanding their functionality and offering users access to a broader range of capabilities.

• Wireless Connectivity:

- Our glasses are equipped with both Wi-Fi and Bluetooth connectivity options, allowing them to establish connections with various IoT devices and networks.
- This wireless connectivity enables real-time data exchange, ensuring that the glasses can access and provide information from connected sources.

• Cloud Integration:

- Data generated by the glasses, including object recognition information, text-to-speech conversions, and user preferences, is securely transmitted to cloud servers.
- Cloud integration facilitates remote management and updates, ensuring that the glasses stay current with the latest features and improvements.
- It also allows users to access their data from multiple devices and share it with authorized individuals, such as caregivers or healthcare professionals.

• Data Sharing:

- Users can effortlessly share information about identified objects, people, or text with friends, family, or caregivers through the glasses' interface.
- This feature fosters social inclusion and enhances the user's ability to engage with their surroundings by enabling others to understand and assist with their needs.

• Remote Assistance:

- In situations where additional guidance is required, users can initiate remote assistance sessions directly from their glasses.
- A designated helper, connected through a compatible device, can see the live camera feed from the glasses and provide real-time guidance and descriptions, enhancing the user's independence and safety.

- This remote assistance feature ensures that users have access to immediate support whenever they encounter challenges in their daily activities.

By elaborating on each point in detail, we provide a comprehensive understanding of the user interface and IoT integration features of our innovative glasses for the visually impaired. These features combine to create a powerful tool that enhances the independence and quality of life for users.

VII. CONCLUSION

In conclusion, the AI and IoT-based glasses presented in this study exemplify a profound fusion of technological innovation and compassionate design, with the overarching objective of empowering individuals who contend with visual impairments. These glasses transcend the realm of wearable technology, embodying symbols of independence and inclusivity. The intricately woven system architecture, comprising advanced hardware and software components, redefines the boundaries of assistive technology, in alignment with the principles of the IEEE.

The pivotal hardware components include a high-resolution camera endowed with object recognition capabilities, a discreet bone-conduction audio system for auditory feedback, a meticulously crafted lightweight and ergonomic design to ensure user comfort, an embedded microcontroller unit facilitating real-time data processing, a high-capacity rechargeable battery to sustain uninterrupted usage, and integrated connectivity modules for seamless IoT integration and cloud-based services.

On the software front, a suite of sophisticated computer vision algorithms, compliant with IEEE standards, powers real-time object detection and description. Natural language processing enables intuitive voice-based interaction, while IoT middleware ensures smooth communication with external devices and cloud services. The user interface is intuitively designed, featuring gesture and voice commands, and is complemented by a dedicated mobile application for customization and remote control.

To realize real-time object identification, these glasses leverage state-of-the-art object detection and recognition algorithms, specifically YOLO and a modified ResNet architecture. These algorithms conform to IEEE standards, enabling precise and swift object identification and labeling within the user's environment. The discreet conveyance of this information through the bone-conduction audio system aligns with the user's need for enhanced situational awareness.

In summary, these AI glasses represent a profound embodiment of the IEEE's vision of technological advancement in service of humanity. They epitomize a vision of independence and inclusivity, where the convergence of AI and IoT provides the invaluable gift of real-time assistance, heightened awareness, and unwavering confidence to individuals grappling with visual impairments. This technological innovation exemplifies a significant stride toward dismantling barriers and enriching the lives of those facing visual challenges, in accordance with

the IEEE's commitment to fostering technological solutions
that benefit society.

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STATEMENT OF PURPOSE

Write statement of purpose for admission
in IIT Bombay.

P.S.

STATEMENT OF PURPOSE

[Assignment No. 5]

Shirish Shetty

Spring 2025

IIT Bombay

My journey into the world of computer science began long before my undergraduate studies in computer engineering at Thadomal Shahani College of Engineering. It commenced with my introduction to C++, my first programming language, as part of my school curriculum. As I began to explore the world of C++, I realized that it was not merely a subject but a gateway to innovation. I soon found myself captivated by the world of programming, using C++ to create small applications ranging from calculators to mini games and simple user interfaces. This early experience ignited a profound interest in software development and inspired me to explore the vast landscape of web development and mobile applications. I became a web development enthusiast, dedicated to crafting interactive applications for both desktop and mobile platforms. Now, as I stand at the threshold of advancing my education and skills, I am drawn to the unparalleled academic and research opportunities offered by IIT Bombay. It is here, amidst the intellectual dynamism and pioneering research environment, that I aspire to nurture my passion and expertise in web development, data science, and artificial intelligence.

My journey has been further enriched by practical experiences, including internships at Prodigy Infotech Pvt Ltd, where I honed my skills as a front-end web developer, and CodeClause Pvt Ltd, where I delved into full-stack development while promoting ethical tax strategies. My active participation in the Devs Club at my college and my involvement in hackathons exposed me to diverse perspectives and pushed the boundaries of my knowledge. One of my proudest accomplishments is the development of a Pothole Detection System, a project for social good. This system utilizes image processing to detect potholes and communicates their coordinates to municipal corporations, contributing to safer and better-maintained roads. Additionally, my ongoing data science project seeks to predict electronic gadget prices, empowering consumers with insights to make informed purchasing decisions.

IIT Bombay is renowned not only for its academic excellence but also for its dynamic research environment and the calibre of its faculty members. I am particularly drawn to the opportunity to work under the guidance of esteemed professors who are pioneers in the field of computer science. IIT Bombay's state-of-the-art infrastructure, research facilities, and collaborative atmosphere provide an ideal platform for me to delve into cutting-edge research and practical

projects in web development, mobile applications, and related areas. Moreover, the diverse and vibrant campus community at IIT Bombay promises a rich cultural and academic experience that I am eager to be a part of.

In conclusion, my journey from the inception of C++ to my experiences in web development, data science, and social impact projects has shaped my aspirations and led me to pursue a Master's degree at IIT Bombay. I am committed to contributing to the vibrant academic community and continuing my quest for innovation in the ever-evolving field of computer science. I eagerly anticipate the opportunity to be part of the IIT Bombay family and contribute to its legacy of excellence.

CORPORATE ETHICS [Assignment No. 6]

What are the issues of integrity, ethics and law posted in case study.

The case study present several issues related to integrity, ethics and laws, they are product integrity and safety, ethical responsibilities, transparency and disclosures, government regulations and compliance, health impact of soft drinks, corporate responsibilities etc.

The most significant issue in the case is safety and integrity of Coca Cola's products. The reports of school children falling ill after consuming Coke's beverage raised questions about company's commitment to product safety and quality control. Coca Cola had ethical responsibility to promptly address the health concerns of consumers. Failing to do so and not disclosing relevant information about prior incident of illness could be seen as unethical behaviour.

Transparency is the key ethical principles in business. Coca Cola faced criticism for not disclosing information about people who

had become ill before the public outcry. This lack of complying with government regulation. The case highlights the importance of complying with government regulation related to product safety. The bans imposed by several investigations by health authorities emphasize the need for business to adhere to legal authorities and requirements.

The commercialization in schools issue focuses particularly on exclusive contracts between coca-cola and schools. Critics argue that such contracts exploit school children and promote unhealthy beverage consumption. This raises ethical questions about marketing to vulnerable populations. The case also concerns about health impact of soft drinks, particularly on young people. Health experts argue that increased soda consumption leads to those who fell ill after consuming their products.

The company could embark on a comprehensive public relation and marketing campaign to rebuild consumer trust. This might include emphasizing their commitment to safety and quality control. The government had already laid on ban on bare or Coca Cola's products. They could continue the ban until the root causes of the health issues were identified and addressed. Authorities could ^{erage} public awareness.

What options did the soft drink company and government have?

In response to the health concerns and ban on Coca-Cola's products, both soft drink company and government had various options. Coca-Cola took the immediate step of recalling the product in response to report of illness of school children. They could conduct thorough investigation into root causes of illness and continue the recall process to remove the affected product. Coca-Cola could have done proper communication with public and health authorities and could be transparent about their prior knowledge of people's illness. To show their responsibility and concern, they could offer compensation to those who fell ill after consuming their products. Coca-Cola could rebuild trust by campaigns & commit to safety of their customers.

The government had already imposed a ban on Coca-Cola products. They could continue the ban further until the root causes of the health issues are identified. Health authorities could conduct inspections of Coca-Cola manufacturing plants to ensure safety and quality standards. They could monitor their actions to ensure the public health safety in future. The government could consider implementing or revising the regulations related to the production and distribution of soft drinks.

If you were the decision maker what decision would you have taken and why?

As a decision-maker I would prioritize actions that ensures the safety of customers, uphold ethical standards and help rebuild trust in company. When a decision I would consider taking and reasons behind them.

I would continue and expand recall of all potentially affected products. Production and distribution would be halted until cause of health issue was identified and resolved.

I would offer compensation to those who fall ill after consuming our products covering medical expenses and other related costs. Taking responsibility for consumer well being and offer compensation demonstrates empathy and good will. It is essential to determine whether the problem lies in manufacturing, transportation or other factors.



DO YOU HAVE THE TIME?

Take time out for this check-up. It's easy: Answer 'Yes' or 'No'

1. I'd rather do the right things than do things right. Yes
2. If I dislike task (A) and like another (B), I do B first. No
3. I try to handle every piece of paper only once. Yes
4. I find that many tasks I delegate come back to me. Yes
5. I make a daily priority list; same place, same time. Yes
6. I often feel I am doing the working of my staff. No
7. I have protected times for planning, meditating. Yes
8. I don't find time for exercise. Yes
9. I go after the top tasks in my prime (energetic) time. No
10. I'd love to train my staff but can't find time. Yes
11. I organize my time and execute around priorities. Yes
12. I spend much time on small decisions. No
13. I often ask: What is the best use of my time right now? Yes
14. I find that my work is jeopardizing my marriage. No
15. I do weekly planning to balance the roles in my life. Yes
16. I find it difficult to say 'No'. Yes
17. I don't let routine work displace my non-routine work. Yes
18. If a job is worth doing, it is worth doing perfectly. Yes
19. I find time to strengthen key relationships. No
20. I put off big projects till I have long free periods. No
21. I find time for my family. No

Time Management



- 1.) Yes
- 2.) NO
- 3.) Yes
- 4.) Yes
- 5.) NO
- 6.) No
- 7.) NO
- 8.) Yes
- 9.) Yes
- 10.) Yes
- 11.) Yes
- 12.) NO
- 13.) Yes
- 14.) NO
- 15.) Yes
- 16.) Yes
- 17.) NO
- 18.) Yes
- 19.) Yes
- 20.) Yes
- 21.) NO



Leadership Questionnaire

Name

Group

Directions: the following items describe aspects of leadership behavior. Respond to each item according to the way you would most likely act if you were the leader of a work group. Circle whether you would most likely behave in the described way always (A), frequently (F), occasionally (O), seldom (S), or never (N). Once the test is completed, go back to number 2 under Implementation.

A	F	O	S	N		1.	I would likely act as the spokesperson of the group.
A	F	O	S	N		2.	I would encourage overtime work.
A	F	O	S	N		3.	I would allow members complete freedom in their work.
A	F	O	S	(N)		4.	I would encourage the use of uniform procedures.
A	F	O	S	N		5.	I would permit the members to use their own judgment in solving problems.
A	F	O	S	N		6.	I would stress being ahead of competing groups.
A	F	O	S	N		7.	I would speak as representative of the group.
A	F	O	S	N		8.	I would needle members for greater effort.
A	F	O	S	N		9.	I would try out my ideas in the group.
A	F	O	S	N		10.	I would let the members do their work the way they think best.
A	F	O	S	N		11.	I would be working hard for a promotion.
A	F	O	(S)	N		12.	I would tolerate postponement and uncertainty.
A	F	O	S	N		13.	I would speak for the group if there were visitors present.
A	F	O	S	N		14.	I would keep the work moving at a rapid pace.
A	F	O	S	(N)		15.	I would turn the members loose on a job and let them go to it.
A	F	O	S	N		16.	I would settle conflicts when they occur in the group.
A	F	O	S	N		17.	I would get swamped by details.
A	F	O	S	N		18.	I would represent the group at outside meetings.

A	F	O	S	N		19.	I would be reluctant to allow the members any freedom of action.
A	F	O	S	N		20.	I would decide what should be done and how it should be done.
A	F	O	S	N		21.	I would push for increased production.
A	F	O	S	N		22.	I would let some members have authority which I could keep.
A	F	O	S	N		23.	Things would easily turn out as I had predicted.
A	F	O	S	N		24.	I would allow the group a high degree of initiative.
A	F	O	S	N		25.	I would assign group members for to particular tasks,
A	F	O	S	N		26.	I would be willing to make changes.
A	F	O	S	N		27.	I would ask the members to work harder.
A	F	O	S	N		28.	I would trust the group members to exercise good judgement.
A	F	O	S	N		29.	I would schedule the work to be done.
A	F	O	S	N		30.	I would refuse to explain my actions.
A	F	O	S	N		31.	I would persuade others that my ideas are to their advantage.
A	F	O	S	N		32.	I would permit the group to set its own pace.
A	F	O	S	N		33.	I would urge the group to beat its previous record.
A	F	O	S	N		34.	I would act without consulting the group.
A	F	O	S	N		35.	I would ask that group members follow standard rules and regulations.

T _____

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Opinion Survey on Conflict Management

Please read each statement given below and write a number from 1 to 5 in the space on the left hand side of the statement to indicate your opinion.

- Write 1 if you strongly disagree with the statement.
- Write 2 if you disagree with the statement.
- Write 3 if you half agree and half disagree with the statement.
- Write 4 if you agree with the statement.
- Write 5 if you strongly agree with the statement.

1. Conflicts are inevitable in organizations and nothing can be done about them. 1
2. The best strategy is to avoid conflict situations. 5
3. Conflict is like a problem; we have to find the causes and try to find solutions. 5
4. Conflict can be solved only if one shows one's strength to the other party. 3
5. In a conflict situation both the parties have to give up something in order to reach a situation. 4
6. A third party should be asked to give a solution to a difficult conflict. 3
7. It is better to give concessions to the opponent group to win their confidence. 3
8. The best way to deal with conflicts is to withdraw from the scene for sometime. 4
9. It is better to lie low and live with conflict. 1
10. In a conflict situation one party should leave to avert unpleasantness. 3
11. Conflict management needs an involved process of joint exploration for solution(s). 4
12. In most conflicts one should fight out the solution. 4
13. Compromise is the best strategy in managing a conflict. 3
14. When two parties are deeply in conflict, arbitration by an acceptable outside party may be very helpful. 4
15. Accepting a few demands of the opponent group may help in solving the conflicts. 4
16. If one waits for sometime and does not attempt to solve the problem, the conflicts will get defused and resolved in the due course of time. 1
17. It is foolish to be bothered by conflicts; they are there and we may better live with them. 1
18. If a group interacts with the other group only on the necessary and limited dimensions, conflicts can be managed. 2
19. Conflicts can be solved if the conflicts parties understand each other, and jointly search alternative solutions. 5
20. The more powerful you are, the more effectively you can resolve the conflicts. 3
21. If conflicting parties accept a part of each other's demands, conflict can be resolved. 3
22. Difficult conflicts can be resolved by an impartial arbitration acceptable to both the conflicting group, so that conflicts can be effectively resolved. 3
23. It is better to buy peace for sometime even by acceding to some demands of the conflicting group, so that conflicts can be effectively resolved. 4
24. Waiting for sometime to let the emotions subside helps in resolving the major problems. 2

Scoring key:

Conflict management style Items

1. Resignation	1, 9, 17
2. Withdrawal	2, 10, 18
3. Appeasement	7, 15, 23
4. Defusion	8, 16, 24
5. Confrontation	4, 12, 20
6. Arbitration	6, 14, 22
7. Compromise	5, 13, 21
8. Negotiation	3, 11, 19

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Entrepreneurial Self-Assessment Survey

This is not a test! This survey is for your personal information.
Please answer each of the following questions as honestly as possible.

Strongly Agree
5

4

Somewhat Agree
3

2

Strongly Disagree
1

- 2 1. I am willing to work 50 hours or more per week regularly.
- 4 2. My family will support my going into business.
- 3 3. I am willing to accept both financial and career risks when necessary.
- 3 4. I don't need all the fringe benefits provided by conventional employment.
- 4 5. I would like to take full responsibility for the successes and failures of my business.
- 3 6. I would experience more financial success by operating my own business.
- 5 7. I feel a great deal of pride when I complete a project successfully.
- 4 8. I have a high energy level that can be maintained over a long time.
- 3 9. I enjoy controlling my own work assignments & making all decisions affecting my work.
- 4 10. I believe that I am primarily responsible for my own successes and failures.
- 3 11. I have a strong desire to achieve positive results even when it requires a great deal of additional effort.
- 3 12. I have a good understanding of how to manage a business.
- 2 13. I can function in ambiguous situations.
- 1 14. One or both of my parents were entrepreneurs.
- 2 15. I believe that my abilities and skills are greater than those of most of my coworkers.
- 3 16. People trust me and consider me honest and reliable.
- 2 17. I always try to complete every project I start, regardless of obstacles and difficulties.
- 5 18. I am willing to do something even when other people laugh or belittle me for doing it.
- 3 19. I can make decisions quickly.
- 4 20. I have a good network of friends, professionals, and business acquaintances.

TOTAL: 66

Total the numbers you placed before the statements and enter the total in the space provided.

Characteristics of an Entrepreneur

The following list describes some common characteristics of an entrepreneur. The number(s) after each characteristic indicates the related statement(s) in the assessment form. This list interprets the form qualitatively. Note that arriving at a conclusive portrait of a typical entrepreneur is very difficult. Therefore, you may score low on the assessment and still succeed as an entrepreneur.

Works Hard (Statements 1 & 8)

Self-employment requires a great deal of time and effort. The entrepreneur must perform a wide variety of time-consuming tasks. 77% of all entrepreneurs report working 50 hours or more per week, and 54% say that they work more than 60 hours per week. Such a time commitment requires that you have a high energy level.

Wants Financial Success (Statement 6) A primary reason that most entrepreneurs have for going into business is to achieve financial success. If you want to be an entrepreneur, you need to establish a reasonable financial goal that you want to achieve through self-employment. This goal will help you measure how well you are doing in fulfilling your personal needs through an entrepreneurial career.

Has Family Support (Statement 2)

A successful entrepreneur needs family support. If you are married, your spouse must believe in your business because it will require that both of you sacrifice time and money. The stress may create disruptions in family relationships. If you have children, they will need encouragement in understanding your need to spend so much time away from the family. The more positive support you receive from your family, the more you can concentrate on making the business a success.

Is Energetic (Statements 1 & 8)

Self-employment requires long work hours. You will frequently be unable to control the number of hours required to fulfill all the necessary tasks. The entrepreneur must have a high energy level to respond to the job's demands.

Has an Internal "Locus of Control", (Statement 10)

Successful entrepreneurs have an internal *locus of control* or inner sense of responsibility for the outcome of a venture. To be an entrepreneur, you should have a strong sense of being a "victor" who is responsible for your actions. If, however, you often consider yourself a "victim" and blame other people, bad luck, or difficult circumstances for your failures, entrepreneurship might not be the right career move for you.

Takes Risks (Statement 3)

Entrepreneurs are risk takers. They risk their careers, time and money in order to make a success of their businesses. To be successful in self-employment, you should feel comfortable taking reasonable risks.

Sacrifices Employment Benefits (Statement 4)

One of the major realities of self-employment is that you won't receive a regular paycheck. You pay for your own fringe benefits. A nice office, secretarial assistance, equipment and other features of employment you have grown to expect are no longer available unless you provide them for yourself.

Has a Need to Achieve (Statements 7 & 11)

Entrepreneurs have a strong need for achievement. They strive to excel and accomplish objectives that are quite high. You should be willing to set high goals for yourself and enjoy striving to achieve those goals.

Has Business Experience (Statement 12)

An entrepreneur should have extensive business experience to be successful. General management experience is beneficial because an entrepreneur should know something about all types of management. Formal training and education in management also are helpful.

Is Independent (Statements 5 & 9)

Entrepreneurs like to be independent and in control of situations. Many people who become self-employed consider the opportunity to be their own boss as one of the major benefits of self-employment. Although being independent may not be a major concern for you, it is certainly an aspect of self-employment that you need to feel

comfortable with. If you cannot afford to hire other employees when you begin your business, you may at first be lonely as a self-employed person.

Has a Self-employed Parent as a Role Model (Statement 14)

Research has shown that entrepreneurs are more likely to have a parent who is self-employed. A parent's inspiration and knowledge about operating a business can contribute to an entrepreneur's success.

Has Self-confidence (Statements 10, 15, and 18)

An important characteristic of entrepreneurs is self-confidence. This factor is particularly important when you face major challenges and difficulties with your business. You need to believe in yourself. Your belief will help you overcome the problems that inevitably affect all self-employed persons at some point in their careers.

Has Integrity (Statement 16)

People often cite honesty and integrity as characteristics of entrepreneurs. Customers do not want to deal with business owners who are dishonest and unethical. You should feel positive about your ethical treatment of people and be committed to conducting your business with the utmost integrity.

Has Determination (Statement 17)

One of the most important characteristics of entrepreneurs is determination. This trait is closely related to self-confidence. The more you believe in yourself, the more likely you are to continue to struggle for success when faced with tremendous obstacles. You need determination in order to overcome the problems that beset every new venture.

Adapts to Change (Statement 13 and 19)

A new business changes rapidly, so an entrepreneur must be able to adapt to change. Two primary skills are required for adaptation to change: the capacity to solve problems, and the ability to make quick decisions. Another skill is the ability to learn from your mistakes.

Has a Good Network of Professionals (Statement 20)

An entrepreneur has a good network of professionals. This network provides access to those who can be consulted for advice, information, and referrals. You should have an extensive network of professionals to whom you can turn for assistance.

Score	Assessment
80 - 100	You have outstanding ability to be an entrepreneur.
60 - 79	You have satisfactory ability to be an entrepreneur.
40 - 59	Self-employment may not be an appropriate career for you.
0 - 39	You should probably avoid entrepreneurship.

APTITUDE TEST

[Assignment no. 8]

Exercise 1: Grammar:

Instructions for questions 1 - 11: From among the given alternatives choose the one that best completes the sentence.

1. Truth and honesty ____ the best policy.

(1) are (2) is

2. Fish and rice ____ his favourite food.

(1) are (2) is

3. Your car and mine ____ both at the door.

(1) are (2) is

4. Neither Maradona nor the referee ____ guilty.

(1) are (2) is

5. The garage with the car ____ sold.

(1) were (2) was

6. The state of affairs in the city ____ such as to cause disturbance to normal life.

(1) were (2) was

7. Each of the alleged terrorists ____ arrested.

(1) were (2) was

8. Neither of the alibis ____ convincing.

(1) are (2) is

Shreesh Shetty
2103164
C3 C62

9. The military ____ still under the command of the ousted head.
(1) are (2) is

10. Gymnastics ____ a difficult sport to master.
(1) is (2) are

11. A large number of rioters ____ arrested.
(1) was (2) were

Instructions for questions 12 - 17: Determine whether the given sentences are grammatically correct (option 1) or incorrect (option 2).

12. My father and my brother is in the office. *Correct*

13. Each of you have been allotted separate plots of land. *Correct*

14. Ten chocolates costs five rupees. *Incorrect*

15. The first few pages of the text has been copied. *Correct*

16. Which are your pair of scissors? *Incorrect*

17. Neither he nor his friend know how to play the game. *Correct*.

Instructions for questions 18 - 24: Identify the correct sentence.

18. (1) Bread and pickle are not a good combination.
(2) Bread and pickle is not a good combination.
(3) Bread and pickle be not a good combination.

19. (1) Both the government and the opposition is interested in governance.
(2) Neither the government nor the opposition are interested in governance.
(3) Neither the government nor the opposition is interested in governance.

20. (1) not only was the CEO but his executives also insulted.
(2) The CEO as well as his executives was insulted.
(3) The CEO as well as his executives are insulted.

21. (1) Neither Raj nor his cousin were invited for the big event.
(2) Neither Raj nor his cousin was invited for the big event.
(3) Neither Raj nor his cousin are invited for the big event.

22. (1) Whose is this dirty pair of socks?
(2) Whose are these dirty pair of socks?

- (3) Whose were these dirty pair of socks?
23. (1) According to him, fifty dollars are not a neat sum.
(2) According to him, hundred dollars be a neat sum.
(3) According to him, hundred dollars is a neat sum.
24. (1) None of them was present.
(2) Neither of them were present.
(3) Neither she nor her friend were present.

Exercise 2: Analogies:

Instructions for questions 1 to 7: From the following words, identify which word will make a similar analogous relationship as the first pair.

1. PLANTS : BOTANY :: INSECTS :

- (1) Epidemiology (2) Entomology (3) Helminthology (4) Carpology

2. PULP : PAPER :: HEMP :

- (1) Basket (2) Yarn (3) Cotton (4) Rope

3. HORSE : NEIGH :: HYENA :

- (1) Chatter (2) Talk (3) Laugh (4) Howl (5) Roar

4. BREW : BEER :: DISTILL :

- (1) Milk (2) Oil (3) Butter (4) Bread

5. NEEDLE : KNIT :: LOOM :

- (1) Weave (2) Sew (3) Thimble (4) Stitch (5) Darn

6. COHERENT : CONSISTENT :: IRATE :

- (1) Rage (2) Irritated (3) Unreasonable (4) Cantankerous (5) Hostile

7. ELEPHANT : CALF :: FISH :

- (1) Fawn (2) Fry (3) Cub (4) Roe (5) Fillet

Instructions for question 8 to 13: Each of the following questions consists of two capitalized words that have a certain relationship to each other, followed by a certain pair of words. Choose the pair that is RELATED to each other in the same way as the capitalized pair.

8. SATURN : PLANET

- (1) Star : Sun (2) Fig : Apple (3) Moon : Satellite
(4) Europe : Asia (5) Comet : Meteor

9. INDEX: INDICES

- (1) Object : Symbol (2) Male : Female (3) Worker : Tool
(4) Female : Male (5) Singular : Plural

10. WHITE: PEACE

- (1) Object : Symbol (2) Male : Female (3) Singular : Plural
(4) Female : Male (5) Worker : Tool

11. ANVIL: SMITH

- (1) Fire : Mason (2) Cement : Mortar (3) Shoes : Cobbler
(4) Wickets : Cricketer (5) Hammer : Carpenter

12. FOX: VIXEN

- (1) Goose : Gander (2) Drake : Duck (3) Thoroughbred : Stallion
(4) Horse : Colt (5) Sheep : Coyote

13. FISH : PISCES

- (1) Air : Libra (2) Elements : Clue (3) Crab : Cancer
(4) Lion : Capricorn (5) Libra : October

Exercise 3: Jumbled Sentences:

Instructions for questions 1 – 3: Each of the questions below consists of a paragraph in which the first and last sentences are identified. Choose the option that has the most logical order of the intermediate sentences.

1. A. World War II, was a global military conflict, the joining of what had initially been two separate conflicts.
B. The other began in Europe in 1939 with the German invasion of Poland.

- C. This global conflict split the majority of the world's nations into two opposing military alliances: the Allies and the Axis Powers.
 D. The first began in Asia in 1937 as the Second Sino-Japanese War.
 E. The Allies included USA, UK, France, Russia etc.
 F. Whereas Axis powers included mainly Germany, Italy and Japan.

(1) DBCE (2) CEBD (3) BCDE (4) DBEC (5) CBED

2. A. Bal Gangadhar Tilak was an Indian nationalist, social reformer and freedom fighter.
 B. "Swaraj is my birth right, and I shall have it!"
 C. He is reverently addressed as Lokmanya.
 D. He is known as "Father of the Indian unrest."
 E. This quote of his is well-remembered in India even today.
 F. It means "Beloved of the people" a title that is well deserved.

(1) BCDE (2) DBEC (3) DBCE (4) EBCD (5) CDEB

3. A. 'Chakra' is a Sanskrit term meaning circle or wheel.
 B. They are considered to be a point or nexus of metaphysical and/ or biophysical energy of the human body.
 C. Theories on chakras fit within systems that link the human body and mind into a single unit, sometimes called the body mind or 'namarupa'.
 D. Chakras are commonly described as energy centers in the spine located at major branches of the human nervous system, beginning at the base of the spinal column and moving upwards to the top of the skull.
 E. There is a wide literature on chakra models, philosophy, and lore that underpin many philosophical systems and spiritual energy practices, religious observance, and personal discipline.
 F. These philosophical theories and models were first codified in Ancient India

(1) DBEC (2) DCEB (3) BCED (4) BECD (5) CBED

Instructions for questions 4 - 7: Each of the questions below consists of a set of labelled sentences. These sentences, when properly sequenced, form a coherent paragraph. Choose the most logical order of sentences from among the options.

4. A. According to this philosophy, acquiring the awareness of Brahmanavidya (direct perception or awareness of Reality) alleviates this deep source of suffering.
 B. The Indian philosophy of Advaita Vedanta explains that we suffer as a avidya (ignorance) and maya (misconceived, misinterpreted views of Reality).
 C. Only this awareness directly leads us to moksha (liberation).
 D. Brahmanavidya, thus is an ancient system of Yoga and Philosophy, which helps eliminate suffering.

(1) ACDB (2) ADBC (3) BDCA (4) BACD (5) BADC

5. A. It describes the lives of the young March sisters.
B. 'Little women' is a beloved classic.
C. It is an ambition she is destined to fulfil.
D. Meg is a young girl who settles into quiet domesticity.
E. However Jo, her sister, longs to be a famous author.

(1) ABCDE (2) BADEC (3) BCDAE (4) BAECD

6. A. Unfortunately it is not limited to only the geriatric age group.
B. Children as young as 10 years may have this disease.
C. One of the commonest chronic diseases in old age is Diabetes.
D. However in them, it is usually of type1.

(1) CBDA (2) CABD (3) CADB (4) BADC

7. A. Rising sea levels swamped the coastal regions.
B. Forests replaced open woodlands and grasslands across the continent.
C. The Ice Age was ebbing.
D. About 12000 years ago, warmer, wetter weather was beginning to take hold.
E. As their habitats disappeared, so did the bison and the mammoth.

(1) CDABE (2) DCABE (3) DCBEA (4) BEDCA (5) ABDCE

POWER POINT PRESENTATION

Make PPT on BlindVision AR Glasses for

- 1) Proposal Presentation
- 2) Report . Presentation

✓



PRESENTED BY

2103164

Shirish Shetty

2103165

Sanford Shilesh

2103166

Maithili Shinde

2103167

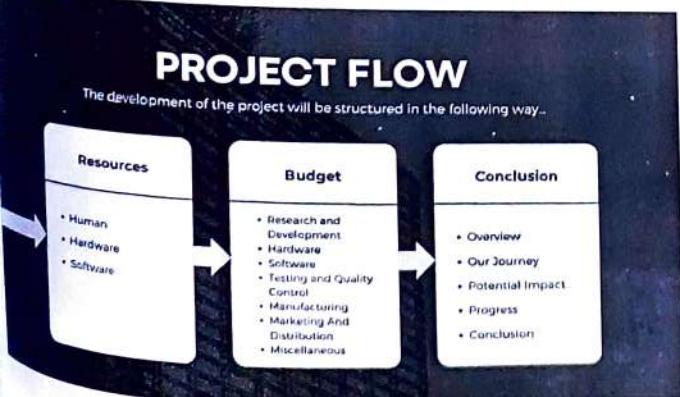
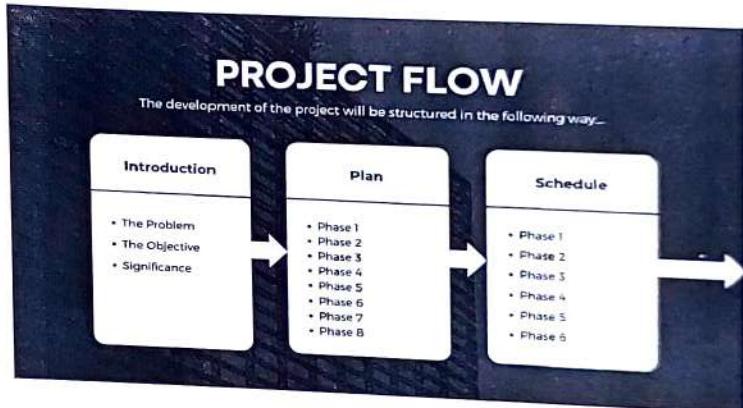
Adarsh Shukla

2103168

Sagar Singh

2103169

Trishala Singhavali



PLANNING IN PHASES

The primary objective of the "BlindVision" project is providing a technological solution that empowers visually impaired individuals to live more independently and confidently. Our aim is to develop an innovative gadget to bridge the gap between visual impairment and everyday life.

PHASE 1: PROJECT INITIALIZATION

- 1.1 Project Kickoff
- 1.2 User Needs Assessment
- 1.3 Regulatory and Ethical Considerations
- 1.4 Infrastructure Setup

PHASE 2: DATA COLLECTION AND PREPROCESSING

- 2.1 Sensor Data Gathering
- 2.2 Data Cleaning and Annotation

PHASE 3: MODEL DEVELOPMENT

- 3.1 Algorithm Selection
- 3.2 Object Detection Models
- 3.3 Speech Synthesis Integration

PHASE 4: UI AND APP DEV

- 4.1 Frontend Development
- 4.2 Backend Development
- 4.3 Integrations

PHASE 5: REAL-TIME FEEDBACK AND UPDATES

- 5.1 Real-time Object Recognition
- 5.2 Cloud Connectivity

PHASE 6: TESTING AND OPTIMIZATION

- 6.1 Usability Testing
- 6.2 Performance Optimization

PHASE 7: DEPLOYMENT AND MONITORING

- 7.1 Deployment
- 7.2 Monitoring and Maintenance

PHASE 8: DOCUMENTATION AND CONCLUSION

- 8.1 Documentation
- 8.2 Training and Support
- 8.3 Final Evaluation

SCHEDULE

Project Planning (2 months) Phase 1: Sensory Data Processing and User Interface (3 months) Phase 5: Deployment and Maintenance



RESOURCES



Human Resources

- Skillset
- User Engagement



Hardware Resources

- Camera
- Processing Power
- Audio Input and Output
- Power Sources
- Sensor Suite
- Connections



Software Resources

- Machine Learning Models
- Speech Synthesis
- User Interface
- Mobile Application
- Data

BUDGET

Category	Description	Quantity	Unit Price	Total Cost
Hardware	Cameras (for 10 units)	10	\$1000	\$10,000
Software	Machine Learning Model	1	\$5000	\$5,000
Infrastructure	Cloud Storage (1TB)	1	\$1000	\$1,000
Support	Training and Support	1	\$2000	\$2,000
Marketing	Product Launch	1	\$5000	\$5,000
Total				\$22,000

CONCLUSION

In conclusion, "Blind Vision" is not just a product. It's a vision for a world where visual impairment is no longer a barrier to independence and exploration. By bringing together innovation, compassion, and technology, we aspire to create an inclusive ecosystem that empowers individuals with visual impairments and fosters a more accessible and understanding society.

INNOVATION 2023

THE IOT GADGET FOR THE BLIND

BlindDVision

A series of small blue dots forming a grid pattern.

Content

- 01 INTRODUCTION
- 02 REQUIREMENTS
- 03 SOFTWARE
- 04 HARDWARE
- 05 INTEGRATION
- 06 ML MODEL
- 07 WORKING
- 08 SURVEY
- 09 CONCLUSION



INTRODUCTION

1. UNDERSTANDING THE CHALLENGE

In today's visually oriented society, the challenges faced by visually impaired individuals navigating their surroundings. For those who are visually impaired, the ability to complete simple tasks can be difficult. Imagine: visual impairment significantly impacts the way individuals interact with and perceive the world around them.

2. BIRTH OF INNOVATION

Given this challenge, what could bridge the gap between the visually impaired and the sighted world? This innovative device serves as a guide, automatically describing objects in real-time as the user explores them. With BlindDVision, the world transforms into an auditory landscape, empowering individuals to navigate confidently, independently, and with a heightened sense of control.

3. IMPACT OF BLINDVISION

BlindDVision极大的降低了盲人对未知障碍物的恐惧感。通过与他们的需求保持一致，盲人可以安全地探索他们的环境，并意识到周围的世界。



Requirements

User Requirements

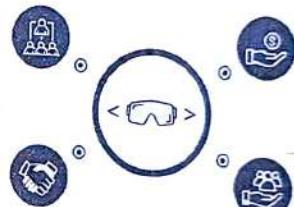
Conduct user interviews and analysis. Implement text-to-speech capabilities to read printed materials, digital screens, and signage.

Technical Equipment Requirements

Specify the components required for BlindDVision, including the wearable glass frame, microphone, speaker, processor, and battery.

Regulatory Requirements

Implement robust data privacy measures to protect user information and ensure compliance with data protection regulations (e.g., GDPR, HIPAA).



SOFTWARE

Overview of the key software components

Object Detection and Recognition Software
Volume Object Detection
Image Object Recognition
Machine Learning Frameworks: TensorFlow, PyTorch, or other frameworks for model training.

Text-to-Speech (TTS) Conversion Software:
Description: This software converts the object descriptions into natural-sounding speech. We can use Google Text-to-Speech API for this purpose.

User Interface Software

Voice Commands
Gesture Recognition

Speech Recognition: Use speech recognition libraries like SpeechRecognition (Python) or cloud-based services like Google Speech-to-Text.

HARDWARE

Introduce the company's main competitors

Camera(s)

The choice of camera type is critical for effective object detection and scene analysis.

Microphones and Audio Output

Implement noise-cancelling microphones to reduce background noise, ensuring clear voice recognition and communication in various environments.

Sensors:

An IMU with sensors like accelerometers, gyroscopes, and magnetometers is necessary for tracking head movements and orientation, which can be used for gesture control and spatial awareness.



INTEGRATION

1. Integrating Software with Hardware
2. Communication between Different Parts of the System
3. Ensuring Seamless Functionality



ML MODEL

Clarify the project's overall objectives and goals.

Deep Learning Architecture

The ML model at the heart of Aligned AI Glasses features a deep learning architecture designed for visual learning that involves neural networks with multiple layers.

Convolutional Neural Networks (CNNs)

Convolutional neural networks are a class of deep learning models particularly adept at processing visual data.

Object Detection and Classification

The ML model is designed to detect and classify objects within the user's environment. It can identify a wide range of objects, including common items, landmarks, people, obstacles, and text.

Real-Time Processing

Real-time processing is a critical requirement for the ML model. It should analyze the images captured by the camera quickly to provide timely feedback to the user, ensuring a seamless and responsive experience.



WORKING



AI serves as the eyes of Aligned AI Glasses, utilizing specialized hardware components for capturing detailed images of the surroundings.

Sensors Behind the Glasses capture the visual data in real-time, informed by a suite of sensors. All smart glasses rely on sensors.

Communication with the user is achieved via a dedicated app that allows users to control their smart glasses through a variety of quality enhancements to ensure uninterrupted audio, video, and device connectivity.

Integration of cameras and microphones. Aligned AI Glasses may incorporate a sensor suite of accelerometers and gyroscopes. These sensors provide the data about the user's movements and orientation, further enhancing the functionality.

SURVEY

Q1: Smart support tools do you use? For example, a white cane.

Participants primarily use long white canes for navigation, mobility, some also rely on guide dogs and electronic devices like Trek Smart.

Q2: Purpose of Support Tools

Most participants use support tools for navigation, mobility, and orientation. One participant uses a combination of a guide dog and GPS with voiceover.

Q3: Object Detection Ratings

Participants rated the object detectability of white canes as high, around 8.5 on a scale of 10. Some mention difficulty of objects due to the cane's limitations in detecting head-wear and knew how to solve objects.

Q4: Orientation Strategies

Participants mentioned various strategies for orientation. One participant uses a compass for sighted navigation or new unfamiliar places.

Moving orientation can be mentally taxing for some participants.



CONCLUSION

In conclusion, this project embarked on a visionary path to create smart glasses infused with advanced artificial intelligence capabilities. The endeavor represents a pioneering effort aimed at transforming the way we interact with our environment. This comprehensive project budget was meticulously designed to ensure the successful development and eventual launch of these innovative smart glasses.

THANK YOU

Shirish Shetty
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Sagar Singh

Sanford Shilesh
Adarsh Shukla
Trishala Singhavi

