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Extracts from the Register of Copyrights

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दिनांक/Dated:20/11/2024

1.	पंजीकरण संख्या/Registration Number	:	**L-156908/2024**
2.	आवेदक का नाम, पता तथा राष्ट्रीयता Name, address and nationality of the applicant	:	MANGALMAY INSTITUTE OF ENGINEERING & TECHNOLOGY , 8, KNOWLEDGE PARK-II, GREATER NOIDA, UTTAR PRADESH, INDIA-201310 INDIAN
3.	कृति के प्रतिलिप्यधिकार में आवेदक के हित की प्रकृति Nature of the applicant's interest in the copyright of the work	:	OWNER
4.	कृति का वर्ग और वर्णन Class and description of the work	:	LITERARY/ DRAMATIC WORK THE WORK EXPLAIN AI POWERED BLIND AID AIMS TO REVOLUTIONIZE ACCESSIBILITY FOR VISUALLY IMPAIRED INDIVIDUALS BY OFFERING COMPREHENSIVE ASSISTANCE ACROSS VARIOUS TASKS.
5.	कृति का शीर्षक Title of the work	:	THE EVOLUTION OF AI-POWERED BLIND AIDS
6.	कृति की भाषा Language of the work	:	ENGLISH
7.	रचयिता का नाम, पता और राष्ट्रीयता तथा यदि रचयिता की मृत्यु हो गई है, तो मृत्यु की तिथि Name, address and nationality of the author and if the author is deceased, date of his decease	:	DR. CHETAN KHEMRAJ , MANGALMAY INSTITUTE OF ENGINEERING & TECHNOLOGY, 8, KNOWLEDGE PARK-II, GREATER NOIDA-UTTAR PRADESH, INDIA-201310 INDIAN DR. BHASKAR GUPTA , MANGALMAY INSTITUTE OF ENGINEERING & TECHNOLOGY, 8, KNOWLEDGE PARK-II, GREATER NOIDA-UTTAR PRADESH, INDIA-201310 INDIAN MR. DHANANJAY SINGH , MANGALMAY INSTITUTE OF ENGINEERING & TECHNOLOGY, 8, KNOWLEDGE PARK-II, GREATER NOIDA-UTTAR PRADESH, INDIA-201310 INDIAN DR. PRADEEP KUMAR , MANGALMAY INSTITUTE OF ENGINEERING & TECHNOLOGY, 8, KNOWLEDGE PARK-II, GREATER NOIDA-UTTAR PRADESH, INDIA-201310 INDIAN MS. KM IKRA , MANGALMAY INSTITUTE OF ENGINEERING & TECHNOLOGY, 8, KNOWLEDGE PARK-II, GREATER NOIDA-UTTAR PRADESH, INDIA-201310 INDIAN MR. ANUJ KUMAR , MANGALMAY INSTITUTE OF ENGINEERING & TECHNOLOGY, 8, KNOWLEDGE PARK-II, GREATER NOIDA-UTTAR PRADESH, INDIA-201310 INDIAN MS. GARIMA SINGH , MANGALMAY INSTITUTE OF ENGINEERING & TECHNOLOGY, 8, KNOWLEDGE PARK-II, GREATER NOIDA-UTTAR PRADESH, INDIA-201310 INDIAN DR. PRAGATI SINHA , MANGALMAY INSTITUTE OF ENGINEERING & TECHNOLOGY, 8, KNOWLEDGE PARK-II, GREATER NOIDA-UTTAR PRADESH, INDIA-201310 INDIAN DR. DHARAM SINGH , MANGALMAY INSTITUTE OF ENGINEERING & TECHNOLOGY, 8, KNOWLEDGE PARK-II, GREATER NOIDA-UTTAR PRADESH, INDIA-201310 INDIAN
8.	कृति प्रकाशित है या अप्रकाशित Whether the work is published or unpublished	:	UNPUBLISHED
9.	प्रथम प्रकाशन का वर्ष और देश तथा प्रकाशक का नाम, पता और राष्ट्रीयता Year and country of first publication and name, address and nationality of the publisher	:	N.A.
10.	बाद के प्रकाशनों के वर्ष और देश, यदि कोई हों, और प्रकाशकों के नाम, पते और राष्ट्रीयताएँ Years and countries of subsequent publications, if any, and names, addresses and nationalities of the publishers	:	N.A.
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13.	यदि कृति एक 'कलात्मक कृति' है, तो कृति पर अधिकार रखने वाले व्यक्ति का नाम, पता और राष्ट्रीयता सहित मूल कृति का स्थान। (एक वास्तुशिल्प कार्य के मामले में कृति पूरी होने का वर्ष भी दिखाया जाना चाहिए) If the work is an 'Artistic work', the location of the original work including name, address and nationality of the person in possession of the work. (In the case of an architectural work, the year of completion of the work should also be shown).	:	N.A.

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If the work is an 'Artistic work', capable of being registered as a design under the Designs Act 2000.whether it has been applied to an article though an industrial process and ,if yes ,the number of times it is reproduced. : N.A.

17. टिप्पणी, यदि कोई हो/Remarks, if any :

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उन्नत मी पंडित

Registrar of Copyrights

The Evolution of AI-Powered Blind Aids

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The Evolution of AI-Powered Blind Aids

Visual impairment presents significant challenges in daily life, affecting navigation, object recognition, and access to printed materials. While traditional assistive devices have provided some support, they often fall short in adaptability and intelligence. Leveraging AI and ML offers a promising solution to enhance these aids, providing dynamic support tailored to individual needs.

The present article explain AI-powered blind aid aims to revolutionize accessibility for visually impaired individuals by offering comprehensive assistance across various tasks. It seeks to harness the power of AI and ML to provide real-time navigation, object recognition, text-to-speech conversion, and personalized assistance, ultimately empowering users to lead more independent lives.

By integrating cutting-edge AI and ML algorithms, this blind aid offers a seamless user experience, addressing the diverse needs of visually impaired individuals. From navigating unfamiliar environments to accessing printed materials, it provides intelligent assistance that enhances independence and accessibility.

In the realm of AI-powered blind aids, the Navigation System serves as the guiding beacon for users, seamlessly blending the prowess of computer vision and GPS technology to chart their course through the world. At its core, this system operates by harnessing computer vision algorithms to analyze live camera feeds, capturing a real-time snapshot of the user's surroundings. This visual data is then processed and interpreted to identify key landmarks, obstacles, and navigational cues within the environment. Simultaneously, GPS technology plays a pivotal role in providing accurate location data, allowing the aid to pinpoint the user's position with precision. By integrating these two technologies, the Navigation System constructs a dynamic map of the user's surroundings in real-time, offering a comprehensive overview of their immediate environment. The Navigation System doesn't merely present this information passively; rather, it actively engages with the user, providing auditory cues and directions to n safely along their chosen route. Through a combination of spoken instructions and

directional prompts, users receive real-time guidance that empowers them to navigate confidently and independently.

Moreover, the Navigation System boasts a remarkable adaptability, capable of adjusting routes on-the-fly based on changing circumstances. By leveraging computer vision algorithms to detect obstacles and hazards in the user's path, the aid can dynamically recalibrate navigation instructions to circumvent potential barriers and ensure safe passage. Furthermore, user preferences are seamlessly integrated into the Navigation System's functionality, allowing individuals to tailor their navigation experience to suit their unique needs and preferences. Whether it's selecting preferred routes, adjusting the pace of auditory cues, or customizing navigation settings, users have the flexibility to personalize their journey according to their individual requirements. The Navigation System represents a fusion of cutting-edge technology and user-centric design, empowering visually impaired individuals to traverse the world with confidence and independence. By leveraging the synergistic capabilities of computer vision and GPS technology, this system opens up new horizons of accessibility, allowing users to navigate unfamiliar environments with ease while embarking on journeys of exploration and discovery.

Object Recognition within AI-powered blind aids harnesses advanced image recognition algorithms to identify objects within the user's environment in real-time. By leveraging sophisticated artificial intelligence techniques, the system analyses live camera feeds to discern objects based on visual patterns, shapes, and other defining characteristics. This enables visually impaired individuals to gain valuable insights into their surroundings, facilitating enhanced navigation and interaction. Once an object is identified, the Object Recognition feature goes a step further by delivering spoken descriptions to the user. Through synthesized speech or auditory cues, users receive detailed descriptions of the recognized objects, empowering them to engage confidently with their environment. Whether it's a chair, a door, or a pedestrian crossing, users benefit from comprehensive object descriptions that enhance their understanding and facilitate independent navigation.

Text-to-Speech Conversion represents a pivotal feature within AI-powered blind aids, leveraging state-of-the-art machine learning algorithms to facilitate seamless access to printed materials for individuals with visual impairments. At its core, this functionality utilizes ML-powered Optical Character Recognition (OCR) technology to interpret printed text captured by the device's camera. By employing sophisticated algorithms, the system analyzes the visual data, recognizing individual characters and translating them into machine-readable text. Once the printed text is converted into digital format, the Text-to-Speech Conversion feature transforms it into audible speech, enabling users to access a diverse range of written materials independently. Whether it's books, menus, signs, or documents, users benefit from the ability to hear the content read aloud in real-time. This empowers visually impaired individuals to engage with written information without the need for sighted assistance, fostering greater autonomy and inclusion in various aspects of daily life. Moreover, the Text-to-Speech Conversion feature offers unparalleled flexibility, allowing users to access a wide array of written materials in diverse formats and contexts. From printed books and documents to restaurant menus and street signs, users can simply point the device's camera towards the text, triggering the OCR technology to convert it into spoken words. This versatility ensures that users have the freedom to access information whenever and wherever they need it, transcending traditional barriers to accessibility.

Personalized Assistance within AI-powered blind aids represents a significant advancement in accessibility, offering tailored support to users based on their unique preferences and interactions. At its core, this feature leverages advanced machine learning algorithms to continuously learn from user interactions, refining its responses and recommendations over time. By analyzing user feedback and behavior patterns, the system adapts its functionalities to better align with individual needs, preferences, and capabilities.

This adaptive learning process enables the Personalized Assistance feature to dynamically adjust to changing environments and user requirements, providing customized support in various situations. Whether navigating crowded city streets, exploring unfamiliar surroundings, or engaging in daily activities, users benefit from personalized guidance and assistance tailored to their specific context. This not only enhances the user experience but also fosters a greater sense of confidence and independence in navigating the world.

Moreover, the Personalized Assistance feature embodies a commitment to inclusivity and user-centric design, ensuring that the aid remains responsive to evolving user needs and preferences. By offering flexible settings and customization options, users have the freedom to fine-tune their experience according to their individual requirements. Whether it's adjusting the level of assistance, setting preferences for navigation prompts, or specifying accessibility settings, users can tailor the aid to suit their unique needs, empowering them to navigate their surroundings with greater ease and confidence.

Smartphone Integration within AI-powered blind aids serves as a pivotal bridge between the aid and the user's personal mobile device, offering a seamless and integrated experience. By seamlessly integrating with smartphones, the aid extends its functionality and connectivity, empowering users with enhanced capabilities and access to additional features. This integration enables users to leverage the processing power and connectivity of their smartphones to augment the functionality of the aid, unlocking new possibilities for navigation, communication, and interaction.

Furthermore, Smartphone Integration facilitates a range of advanced functionalities, including remote assistance, navigation updates, and compatibility with other smart devices. Through remote assistance capabilities, users can seek guidance and support from caregivers, friends, or family members, enhancing their sense of safety and security. Additionally, navigation updates ensure that users have access to the latest mapping data and route information, keeping them informed and empowered during their journeys. Compatibility with other smart devices further enhances the user experience, allowing seamless interaction and integration with a variety of connected devices and services for a truly cohesive and intuitive user experience.

Accessibility Settings within AI-powered blind aids offer users a personalized and adaptable experience, catering to individual preferences and needs. By providing customizable settings for

voice preferences, users can select their preferred voice type and tone, ensuring a more enjoyable and engaging interaction with the aid. Additionally, the ability to adjust speech rate allows users to control the pace at which information is delivered, accommodating varying levels of comfort and comprehension. Shortcut commands further streamline the user experience, enabling quick access to frequently used features and functionalities, thereby enhancing efficiency and convenience.

These Accessibility Settings not only enhance user comfort but also contribute to overall usability, ensuring a more intuitive and seamless interaction with the aid. By allowing users to tailor the settings to their preferences, the aid becomes more user-friendly and accommodating, fostering a sense of empowerment and independence. Moreover, the personalized nature of these settings promotes inclusivity, catering to the diverse needs and preferences of users with different abilities and preferences. Ultimately, Accessibility Settings play a crucial role in enhancing the overall user experience, making the AI-powered blind aid more accessible, user-friendly, and empowering for individuals with visual impairments.

Enhanced Independence is a cornerstone benefit of AI-powered blind aids, providing users with real-time assistance and feedback that empowers them to navigate and interact with their environment independently. Through features such as navigation systems, object recognition, and text-to-speech conversion, users receive immediate guidance and information that enables them to make informed decisions and navigate complex environments with confidence. By leveraging advanced technologies like artificial intelligence and machine learning, these aids offer a level of autonomy and freedom that was previously inaccessible, fostering a greater sense of independence and empowerment among individuals with visual impairments.

Improved Safety is a paramount advantage of AI-powered blind aids, as they boast advanced obstacle detection and navigation capabilities that significantly reduce the risk of accidents for users with visual impairments. By leveraging cutting-edge technologies such as computer vision ıtegration, these aids provide real-time alerts and guidance to help users navigate

safely through their surroundings. Whether it's detecting obstacles on sidewalks, identifying hazards in indoor environments, or providing warnings at intersections, these aids play a crucial role in enhancing user safety and minimizing the likelihood of accidents in diverse settings.

ML algorithms enable the aid to learn from user interactions, continually updating its functionalities to better serve evolving needs.

Text-to-speech conversion expands access to information, promoting educational and employment opportunities for visually impaired individuals.

The integration of AI and ML technologies into blind aids represents a significant advancement in accessibility and inclusivity. This AI-powered blind aid embodies innovation and progress, offering a comprehensive solution that empowers visually impaired individuals to navigate their surroundings with confidence and independence. By embracing cutting-edge technology, we can create a more accessible and equitable society for all.

The AI-powered blind aid operates by harnessing a combination of advanced technologies to provide comprehensive support to visually impaired individuals. At its core, the system utilizes computer vision algorithms to analyze live camera feeds and map out the user's surroundings in real-time. This enables the aid to identify obstacles, landmarks, and other key features within the environment. Simultaneously, GPS technology is integrated to provide accurate location data, allowing the aid to offer personalized navigation guidance tailored to the user's destination and preferences.

Object recognition capabilities further enhance the aid's functionality by enabling it to identify and describe objects in the user's vicinity. Leveraging image recognition algorithms, the aid can recognize a wide range of objects, from furniture and appliances to signage and obstacles. Through spoken descriptions, users receive valuable information about their surroundings, empowering them to navigate independently and interact with their environment more effectively.

Additionally, the aid incorporates optical character recognition (OCR) technology to convert printed text into audible speech. This feature allows users to access printed materials such as

books, menus, and signs by simply pointing the device in the direction of the text. The aid then translates the text into spoken words, enabling users to engage with written information in real-time without relying on sighted assistance.

Moreover, the system continuously learns from user interactions and feedback, adapting its functionalities to better meet the evolving needs of the user. Through machine learning algorithms, the aid becomes increasingly adept at recognizing objects, interpreting environmental cues, and providing personalized assistance. This adaptive learning process ensures that the aid remains effective and relevant over time, continually enhancing the user's experience and independence.

The AI-powered blind aid combines the capabilities of computer vision, GPS technology, object recognition, and OCR to provide a comprehensive solution for visually impaired individuals. By leveraging these advanced technologies, the aid offers real-time navigation, object identification, and access to printed materials, empowering users to navigate their surroundings with confidence and independence.