AI - POWERED VISUAL ASSISTANCE: DEVELOPING AN ANDROID APPLICATION FOR ENHANCED ACCESSIBILITY IN THE VISUALLY IMPAIRED COMMUNITY

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Introduction:

The field of software engineering has advanced, yet improvements that benefit those who are blind or visually challenged have not been made by humanity. As machine learning and artificial intelligence techniques advance, engineers can employ to introduce "intelligence" We may extend this "intelligence" to our cellphones to help visually impaired people understand their surroundings and receive assistance during their daily activities, even in the case of dumb computers and with ease of accessible. With a clear User-Interface and the ability to be accessible even on low-end devices, our mobile application helps visually impaired persons interact with the visual world and improve their understanding of their surroundings.

Our main goal is to investigate and utilize the ways that Deep Learning architecture and simple prototyping tools can assist us in creating applications that run efficiently, even on low-end devices. Our goal with this application is to provide a one-stop shop for blind or partially impaired people so they can better understand their environment and navigate the ever-changing world. With the help of our smartphone application, users may use Natural Language Processing to communicate clearly while taking advantage of Image Captioning Architecture to provide real-time insight into their surroundings. Our mobile application's cornerstone. s its user interface that, because to its simplicity of handling and use, would give the user a clear experience. Our main objective is to create an intuitive and efficient tool that leverages cutting-edge technologies such as machine learning and artificial intelligence to provide real-time assistance and improve the understanding of the surrounding environment for visually impaired users. The proposed mobile application offers a comprehensive suite of features, including Text-To-Speech conversion, Image Captioning Architecture, Optical Character Recognition (OCR), and route planning using the A* algorithm. At the core of our application is a user-friendly interface designed with simplicity and accessibility in mind. By prioritizing ease of use, we aim to ensure that visually impaired users can navigate the application effortlessly, thereby empowering them to interact with the visual world more effectively. Additionally, our application is

optimized to run efficiently on low-end devices, ensuring widespread accessibility regardless of the user's smartphone specifications. In conclusion, our work underscores the importance of leveraging technology to foster inclusivity and accessibility for all members of society. Moving forward, we envision further refinement and expansion of our mobile application to address evolving needs and challenges faced by the visually impaired community, ultimately striving towards a more equitable and inclusive future.