Real-Time Image Generation for Tactile Displays Using AI

Abstract

Children with visual impairments face significant challenges in accessing and interpreting visual information, which can hinder their educational and everyday experiences. To address this, tactile displays that present visual information in a raised dot matrix pattern are being developed. However, traditional tactile displays depend on preloaded modules and fall short by not providing on-demand images, limiting their effectiveness and adaptability. This paper explores an innovative AI-based software designed to assist blind individuals in their learning journey by generating simplified, on-demand images that can be converted into information for traditional tactile displays. Unlike existing systems, this AI-driven solution takes commands and produces easily recognizable, simplified images in real-time. By transforming complex visual information into simplified dot pixel representations, the software ensures that the images are intuitive and easy to perceive through touch. This paper covers the development process, operational mechanisms, and practical applications of this solution, emphasizing its potential to revolutionize learning and accessibility for blind individuals.

Vaishnavi Singh
ID- BTBTS22122
Roll no.- 2216092