**VISION OF DOTS- ASSISTIVE TOOL FOR ARAB BLIND**

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**ABSTRACT**

According to the world health organization 2017 statistics, there are 253 million blind and visually- impaired people in the world who rely on Braille alphabetic writing system for reading and learning. Braille is an alphabetic writing system for blind and visually impaired people, in which alphabetic characters and letters are presented by a pattern of raised dots for the purpose of reading and writing. The blind person can read the raised dots by moving the hand from left to right along each line. Usually, both hands are involved in the reading process and using the index fingers by the blind or visual impaired person. There are many difficulties that blind people face in their lives, especially when it comes to learning and reading. One of the learning difficulties that they face is with their special devices, for example, “Braille translator to translate e-book into braille” has many issues like the need for an electronic version of the books, exaggerated devices prices, and it does not support the Arabic language. Most of the time there is a scarcity in braille printed books because they need volunteers and interpreters to write hard copies of the books in a Word program be translated using special printers. These problems prevent many blind and visually impaired students from getting admission to any educational field. Even in the case of them receiving an admission offer, the seats are limited to a small number of students, for instance, King Abdul-Aziz University (KAU) has around 50 blind students who enrolled to the academic year 2019. Therefore, technological development and research are crucial to helping the visually impaired and blind students in receiving many new educational services that could increase the number of students’ admitted in scientific colleges, which could also help in providing them with the ability to read any material they need.

The project aim is to help the blind or visually impaired user to read any text without the help of anyone and gain independence in the reading process, reducing the time and effort to translating into braille, and have the ability to convert any text an audio recording.

The Vision of Dots (VOD) solution contains two parts software and hardware, the hardware part about a device of Mega Arduino connected with an engine (Servo) tied to long sticks and the head of these sticks represent the braille dots. The software part is a mobile application for Android users to help the student to take a picture using the camera. The Optical Character Recognition (OCR) to extract the text from the picture. After that, the student can choose between hear the text (Arabic google speech) or read it by the braille dots device which has been mentioned in previous part. The software part and the hardware part connect with each other using Bluetooth. Moreover, the project deliverables will consist of three elements, which are: A poster or research paper, a mobile application contains Arabic OCR also controls a Mega Arduino that translates Braille language in real-time and speech translation in Arabic. The OCR has been tested by three programmers on a different size, font, background, from where take the image and which OCR mode is used to by translate (online, offline).

A screenshot of a cell phone

Description automatically generated