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Quick Response Code Based TTS Conversion

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Abstract

QR codes, created by a Japanese organization, have been around for more than fifteen years. With the coming of brilliant and Web skilled cell phones, we witness an unfaltering development of fascinating business applications utilizing QR codes. The principle goal of our venture is to give individuals an innovation that can empower them to get data about anything by essentially checking the QR code. The examining brings about acquiring the content data of a specific example and this data is additionally changed over into discourse utilizing particular programming.

***Keywords:** Quick Response Code (QR) Code, Barcode, Mobile Phone, Text to Speech Converter*

INTRODUCTION

A standardized tag is an optical machine-decipherable representation of information identifying with the question which it is submitted. Primitively standardized identifications spoke to information by changing the widths and spacings of parallel lines, and might be alluded to as straight or one-dimensional codes. Later they developed into rectangles, dabs, hexagons and other geometric examples in two measurements.

QR code remains for Quick Response Code, which is the trademark for the sort of network scanner tag which was created by the Japanese company Denso Wave. QR code has various highlights, for example, huge limit information encoding, soil and harm safe, fast perusing, little

print out size, 360 degree perusing and basic adaptability of utilization.

In certain circumstance when a man goes on an excursion to a traveller put, say a social legacy, at that point in such circumstance, the individual needs to take help of a visitor manual for become acquainted with about the social parts of that place. This occasionally brings about congestion of individuals around the group.

Subsequently, the individual can't finish his visit calmly. Besides, if the individual needs to investigate the place without anyone else/herself, at that point he/she needs to purchase a guide and needs to peruse out the data contained in it. This will thus end up being tedious. Thus, we have concocted a thought that printed data can be best passed on orally.

OBJECTIVE

The primary target of this task is to furnish the individual with the autonomy of investigating things by giving a way to get to data at his/her fingertips. Our venture fundamentally manages the change of a bit of content data into a QR code and back to content in a cell phone. This content is additionally changed over into discourse. Give us a chance to accept that data with respect to any notable place say, Mysore Palace is encoded into a QR code.

This QR code is filtered by a visitor utilizing a cell phone with a QR code scanner and is changed over once again into content in the cell phone. Presently the client gets the data about Mysore Palace in his telephone. At that point utilizing specific programming, the content is changed over into discourse (essentially electronic discourse).

Presently the traveler can tune in to the data of the royal residence utilizing headphones, connected to his/her ears and keep investigating different destinations of the memorable place also. Thus, inside a limited capacity to focus time, the client has all data at his/her transfer. The client can likewise read the content data.

Barcode v/s Qr-Code

Standardized tags and QR codes are comparative in the way that they are information accumulation advancements, which means they mechanize the way toward gathering information. In any case they likewise vary essentially in numerous regions.

Table 1: Comparison between QR code and Barcode

Attribute	Barcode	QR code
Line of sight	Required	Required
Read range	Several inches to feet	Several inches to feet
Identification	Most barcodes identify only one type of item	QR codes can identify items uniquely
Information Capacity	Very less	Less
Reliability	Wrinkled and smeared tags won‘t work	Wrinkled tags may work 30% data recoverable
Data capacity	<20 characters	Upto 7,089 characters
Orientation Dependent	Yes	No
Marginal Cost	0.01$	0.05$

Understanding QR Code

QR codes have just overwhelmed the notoriety of traditional standardized tag in numerous regions as a result of a few points of interest like increment in limit, lessened size, and so on the assortment of uses it can offer influences the utilization of QR to code more unmistakable than that of the scanner tags. Measurably, QR codes can suit the same of information in around one tenth the space of a customary standardized tag. Data, for example, URL, SMS, contact data and plain content can be implanted into the two dimensional lattice. Likewise, the unstable addition in the utilization of cell phones has assumed a critical part in the promoting of QR codes.

Architecture and Encoding

QR code is a two dimensional network with a cell design orchestrated in a square. Figure 1 demonstrates the QR code engineering. QR codes incorporate diverse territories that are held for particular

purposes. Discoverer, separator, timing examples and arrangement designs are the capacity designs. Capacity designs are not utilized for the information encoding. The discoverer designs are situated at the three corners of the image and are expected to aid simple area of its position, size and slant.

The method utilized for encoding of the QR Code incorporates the accompanying advances: Initially the info information is encoded by most productive mode and bit streams are gotten. The bit streams are then partitioned into codewords. Further, the codewords are partitioned into squares, and mistake remedy is performed. All these codewords are put into a lattice and are veiled with cover design. At long last capacity designs are included into the QR image. What's more, in this manner, we get a QR Code image.

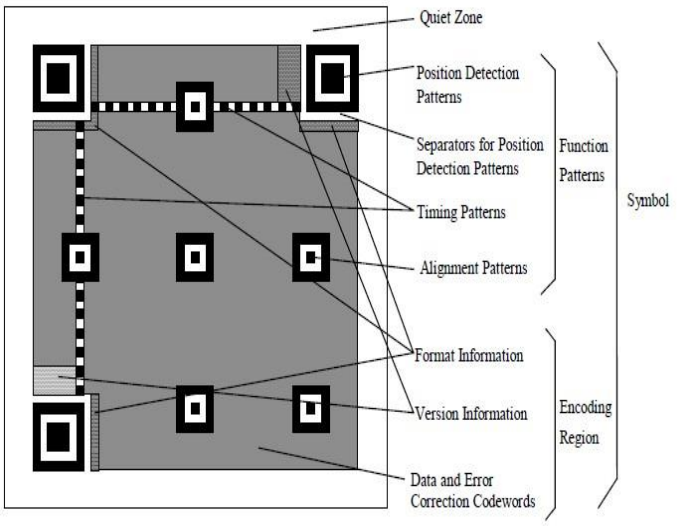


Figure 1: QR code architecture

Basic characteristics

Table 2: Encodable character set

1.	Numeric data (Digits 0-9)
2.	Alphanumeric data (Digits 0 - 9; upper case letters A
3.	8-bit byte data
4.	Kanji characters

1) Encodable character set:

2) Representation of information: A dull module is a paired one and a light module is a double zero.

3) Symbol estimate (excluding calm zone): 21 modules to 177 modules. Variants 1 to 40, expanding in ventures of 4 modules for each side

4) Data characters per symbol: Maximum allowable data capacity for maximum symbol size version 40 and minimum error correcting level L.

Table 3: Data characters allowed per symbol

1.	Numeric data	7,089 characters
2.	Alphanumeric	4,296 characters
3.	8-bit byte data	2,953 characters
4.	Kanji data	1,817 characters

II. TEXT TO SPEECH CONVERTER

Discourse combination is the simulated generation of human discourse. A PC framework utilized for this design is known as a discourse synthesizer, and can be executed in programming or equipment. A content to-discourse (TTS) framework changes over typical dialect content into discourse; different frameworks render emblematic etymological portrayals like phonetic translations into discourse. Content to-discourse (TTS) tradition changes etymological data put away as information or content into discourse. It is broadly utilized as a part of sound perusing gadgets for daze individuals as of late. Over the most recent couple of years be that as it may, the utilization of content to-discourse change innovation has become a long ways past the incapacitated group to end up noticeably a noteworthy extra to the quickly developing utilization of advanced voice stockpiling for phone message and voice reaction frameworks. Likewise advancements in Speech combination innovation for different dialects have officially occurred.

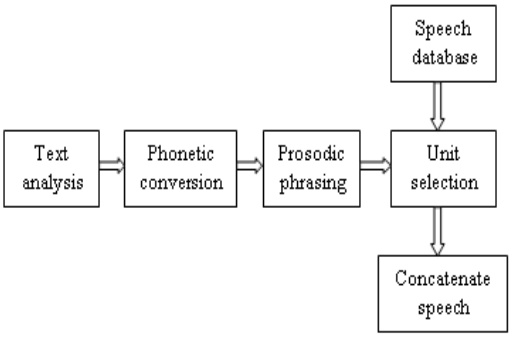


Figure 2: Block diagram of Text to Speech conversion

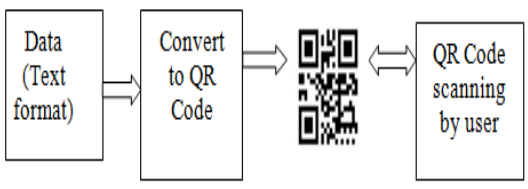
A content to-discourse framework (or "motor") is made out of two sections: a front-end and a back-end. The front-end has two noteworthy errands. In the first place, it changes over crude content containing images like numbers and shortened forms into what might as well be

called composed out words. This procedure is regularly called content standardization, pre-handling, or tokenization. The front-end at that point relegates phonetic interpretations to each word, and partitions and denotes the content into prosodic units, similar to expressions, provisions, and sentences. The way toward appointing phonetic translations to words is called content to-phoneme or grapheme-to-phoneme change. Phonetic translations and prosody data together make up the emblematic etymological portrayal that is yield by the front-end. The back-end—regularly alluded to as the synthesizer—at that point changes over the emblematic phonetic portrayal into sound.

METHODOLOGY

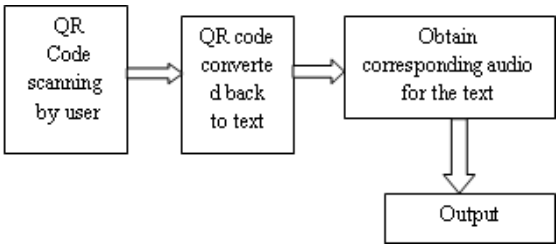
The system has two phases to be specific, age of QR code and getting data from it by checking it and also, transformation of the data into electronic discourse.

Stage 1



Right off the bat, a QR code is created for the given data and the QR code is stuck on the announcement. This stage is finished with the client examining the QR code. Here the QR code is created utilizing Matlab.

Stage 2



Stage two is a continuation of stage one where the client filters the QR code. Further, the comparing implanted content is gotten. All the while, relating electronic sound is likewise produced. The content data is accessible to the client's transfer which can either be perused or can be heard utilizing speakers.

SPEECH SYNTHESIZER

Content to-discourse combination happens in a few stages. The TTS frameworks get a content as information, which it initially should investigate and after that change into a phonetic portrayal. At that point in a further advance it creates the prosody. From the data now accessible, it can create a discourse flag.

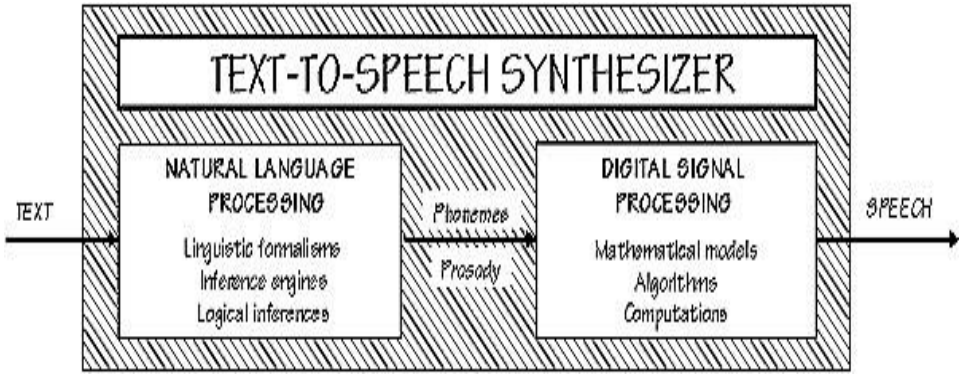


Figure 3: Speech synthesizer

The structure of the content to-discourse synthesizer can be separated into real modules:

Natural Language Processing (NLP) module:

The NLP module takes a progression of content info and produces a phonetic interpretation together with the coveted inflection and prosody (beat) that is prepared to pass on the DSP module. The NLP module is made out of three noteworthy parts: content analyzer, letter-to-sound (LTS), and prosody generator. Content investigation is a dialect subordinate part in TTS framework. It is summoned to examine the info content.

The real operations of the NLP module are as per the following:

Text Analysis:

In the first place the content is fragmented into tokens. The token-to-word change makes the orthographic type of the token. For the token "Mr." the orthographic frame "Sir" is shaped by extension, the token "12" gets the orthographic frame "twelve" and "1997" is changed to "nineteen ninety seven".

Application of Pronunciation Rules:

After the content investigation has been finished, articulation standards can be connected. Letters can't be changed 1:1 into phonemes since correspondence isn't generally parallel. In specific situations, a solitary letter can compare to either no phoneme (for instance, "h" in "got") or a few phonemes.

Digital Signal Processing (DSP) module:

It changes the emblematic data it gets from NLP into capable of being heard and clear discourse. The operations associated with the DSP module are the PC simple of powerfully controlling the articulartory

muscles and the vibratory recurrence of the vocal creases so the yield flag coordinates the info necessities. This can be fundamentally accomplished in two routes: Explicitly, as a progression of tenets which formally portray the impact of phonemes on each other and Implicitly, by putting away cases of phonetic advances and co-explanations into a discourse fragment database, and utilizing them similarly as they seem to be, as extreme acoustic units

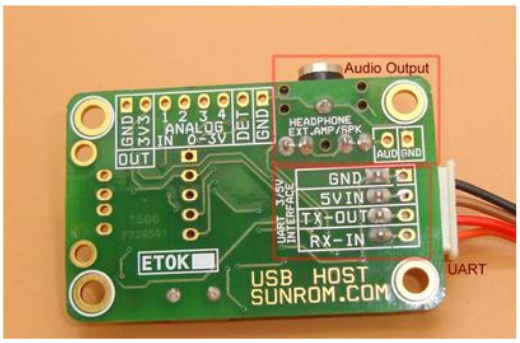


Figure 4: TTS module

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