Optical Character Recognition and Language Translator

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In the last few decades with the advancement of technology, people have been efficiently able to communicate with each-other despite the barriers of language. We want to improve on the technology such that no person should feel alienated at any part of the world. For this reason, we propose an app that would convert the text in foreign languages to their native languages. The main features of the proposed app are discussed as follows:

1) Text Scanning and Translation

We aim to make a scanner that would detect the text from any banners or sign boards. The machine would intelligently recognize the language that it has seen in the given boundary and then convert the language into the preferred language of the user. This would be done in a two-step process i.e. first localize text characters, recognize the language and translate it (as required) that is being seen on the screen. In order to localize the characters, we intend to use **Convolutional neural networks** and highlight the area where characters are found. Then it would invoke a character detection process to convert the character in the phone readable format. After that it would translate the language into the preferred language of the user so that he/she can easily comprehend the content on the screen. This could be achieved by using different **NLP techniques** in conjunction to several to a **translator API** for the complex text. We realize that this might be a vital significant to visitors and nonnatives as they can easily read the sign banners and signboards getting knowledge about the place.

2) Object detection and translation

This would provide an alternative approach to the users to learn new languages. For this feature the user would have to point to any object. For resolving ambiguity, we would prioritize objects of basic need or the object more frequently used by the tourists. As soon as the object is detected we would then translate the object to the required language. Say if you point the device to a bottle of water in Punjab the app would pronounce the Punjabi word of water. This would help people buy things of basic need and moreover they can grasp the most frequently used bits of the language which would be a powerful asset to any person visiting foreign land.

As non-Punjabi speakers this project is made on reflection of our own experiences and struggles. We believe that the project can prove to be meaningful in people's life and reduce the inconvenience and ultimately bring people together.