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NATIONAL URBAN SECURITY TECHNOLOGY LABORATORY

SAVER TechNote

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LANGUAGE TRANSLATION APPLICATIONS

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Language translation equipment used by emergency services has evolved into commercially available, mobile device applications (apps). The wide adoption of cell phones has enabled language translation applications to be useful in emergency scenarios where first responders may interact with individuals who speak a different language. Most language translation applications can identify a spoken language and translate in real-time. Applications vary in functionality, such as the ability to translate voice or text offline and are unique in the number of available translatable languages. These applications are useful tools to remedy communication barriers in any emergency response scenario.

Overview

During an emergency response, language barriers can challenge a first responder's ability to quickly assess and respond to a situation. First responders must be able to accurately communicate with persons at an emergency scene in order to provide a prompt, appropriate response. The quick translations provided by mobile apps remove the language barrier and are essential to the safety of both first responders and civilians with whom they interact.

Before the adoption of smartphones, first responders used language interpreters and later language translation equipment such as hand-held language translation devices (Figure 1). This equipment served an important function, as any delay in an interpreter's arrival on scene could adversely affect the communication of time-critical information and aid; however, this equipment requires training and dedicated maintenance. Commercially available language translation apps integrate with smartphone hardware such as cameras, speakers and microphones to facilitate text and voice translation.

Language translation applications are a quick and accessible tool for first responders to use during a response to bridge a language barrier and provide appropriate actions for the safety of those involved.

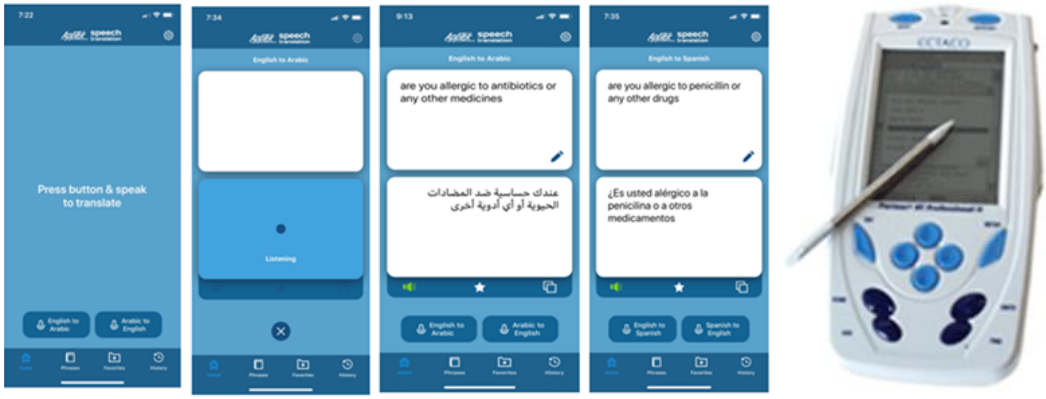

Figure 1: Screenshots of Language Translation Application
Image courtesy of AppTek

The U.S. Department of Homeland Security (DHS) established the System Assessment and Validation for Emergency Responders (SAVER) Program to help emergency responders improve their procurement decisions.

Located within the Science and Technology Directorate, the National Urban Security Technology Laboratory (NUSTL) manages the SAVER Program and conducts objective operational assessments of commercial equipment and systems relevant to the emergency responder community.

The SAVER Program gathers and reports information about equipment that falls within the categories listed in the DHS Authorized Equipment List (AEL).

SAVER publications focus on answering two main questions: "What equipment is available?" and "How does it perform?"

SAVER knowledge products are created for the nation's first responders and made publicly available to help them make operational and procurement decisions.

To explore the full reports library and to learn more, visit SAVER online at www.dhs.gov/science-and-technology/SAVER.

For additional information on the SAVER Program, email NUSTL at NUSTL@hq.dhs.gov.

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Language Translation App Functionalities

Most language translation apps use machine translation, which cannot accurately translate between languages due to the ambiguity and flexibility of human language. Despite this, machine translation is the most commonly accepted process. While there are various methods of machine translation, the basic concept of machine translation is automatically translating source text from one language to text in another language.

Automatic Language Detection

Language translation apps are capable of automatically detecting the input language in text or voice format. This prevents the user from having to identify the language requiring translation. Automatic language detection is helpful for first responders that serve in culturally diverse communities whose residents may speak less commonly known languages.

Voice and Text Recognition

Mobile device apps leverage a device's onboard speakers and microphones to incorporate voice recognition and feedback. Voice recognition enables users to speak a word or phrase to be translated and outputs the translated text in an audible response. Users can also input desired text to be translated utilizing their device's screen and on-screen keyboard. The app will then display the translation on the screen.

Real-Time Language Translation

Most apps provide language translations in real-time, which is beneficial in that it as it allows a first responder to act immediately and appropriately. Some apps do this by leveraging existing downloaded libraries, while others require cell reception, internet or Wi-Fi capabilities to reach back to a server for translation services. Each unique emergency may affect an app's ability to translate, especially if communication infrastructure is unavailable, as may be the case when responding to natural disasters.

Language Translation App Considerations

Other considerations for language translation apps include Health Insurance Portability and Accountability Act (HIPAA) compliance, low bandwidth functionality, Android or iOS requirements and available variety of languages.

Health Insurance Portability and Accountability Act

First responders must use tools that comply with HIPAA. HIPAA protects an individual's identifiable health information. During an emergency response, first responders including law enforcement officials, emergency service dispatchers, emergency medical technicians and firefighters may collect a victim's personally identifiable information or protected health information during triage. It is important therefore that these digital apps have thorough security systems in place to protect patient privacy.

Functionality during Disconnected Delayed Intermittent or Low Bandwidth

Language translation apps' functionality depends on whether the mobile device it is installed on has cell reception. Some apps have downloadable libraries with commonly used questions and terms that are specific to emergency situations. Other apps rely on telecommunication infrastructure or WiFi to access the application's server and complete the translation. There are applications that utilize both features and allow for some user customization on which are used.

Available Languages

The number and availability of languages on an app depends on whether the app's library is stored onboard the device or on a server. Apps vary in the availability of offline language translation and can translate from five to 15 languages offline. Other apps—with full communications--can translate over 100 languages.