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Addendum to ARL-TN-1081, Shareable Components Services and Universal Language Translator (ULTRA) Installation on an Android Phone

by Christian Schlesiger

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Addendum to ARL-TN-1081, *Shareable Components Services and Universal Language Translator (ULTRA) Installation on an Android Phone*

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REPORT DOCUMENTATION PAGE

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14. ABSTRACT This document contains an update to the instructions for installing Universal Language Translator (ULTRA) on an Android phone. This addition will instruct a user in how to download speech data for the Google TTS service used by ULTRA for creating Text-to-Speech results of translations. After the speech data has been downloaded, the application can be run on a phone that is completely disconnected from any network.					
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1. Introduction

This document is an addendum to the instructions for installing Shareable Components and the Universal Language Translator (ULTRA) application on an Android phone.¹ This addendum adds additional steps that should be performed as part of the installation of the application and services in order for the application to work completely offline.

Google Speech Services requires an internet connection to function for Text-to-Speech (TTS) generation of audio files in languages other than English unless you have downloaded the speech data to the local phone first. This download must be completed while the phone is connected to the internet prior to using the ULTRA application. Once the files are downloaded, then the phone may be disconnected and WiFi disabled. At this point, the application will continue to function properly.

If the speech data is not first downloaded for a foreign language and is operated while offline, then ULTRA will show an error when it reaches the final step of the translation process and will not complete when translating from English into that foreign language.

As of this writing, there are three foreign language packs available for ULTRA: African accented French, Libyan Arabic, and Ukrainian. Of these, Google Speech Services is used for the generation of speech in French and Ukrainian. As these and other languages are developed further, other TTS engines may be used instead of Google Speech Services, as is the case for Libyan Arabic. The TTS speech data is already downloaded locally to the phone for that language, and no additional steps are necessary to use it.

The steps described in this document should be performed any time after the steps described in Section 5.1, Set the Default TTS Engine, of the installation instructions document.¹

2. Requirements

The following equipment is required for installation:

- An Android phone. The system has been tested on a Samsung Galaxy S7/S10/S20/S21. Other phone models and manufacturers should be compatible with the software with no modification as long as they are running Android 8 or later.
- An Internet connection for the phone, typically through WiFi.

3. Download Google TTS Speech Data

The phone must be connected to the internet before following these steps.

After changing the phone's default TTS engine to Google Speech Services, once again go to Settings, then to General Management where Language and Keyboard are set (Fig. 1).

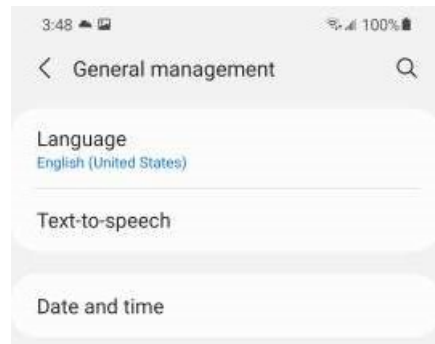


Fig. 1 Top portion of the General Management settings screen

Select the Text-to-Speech setting to get to the Text-to-speech screen (Fig. 2).

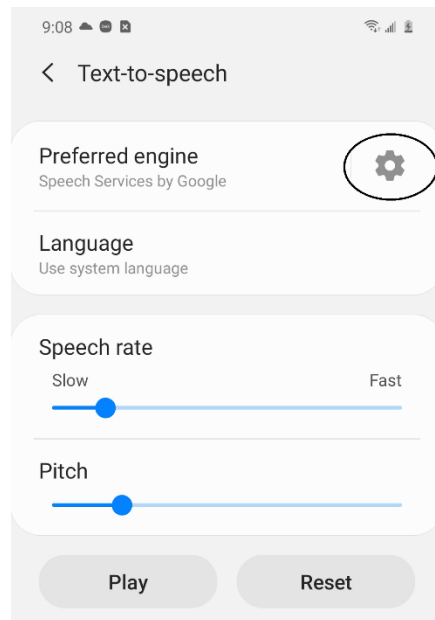


Fig. 2 Text-to-speech settings screen with settings button highlighted

Select the settings button (the gear icon) to get to the Google TTS Options screen (Fig. 3). On that screen, select the option to Install voice data.

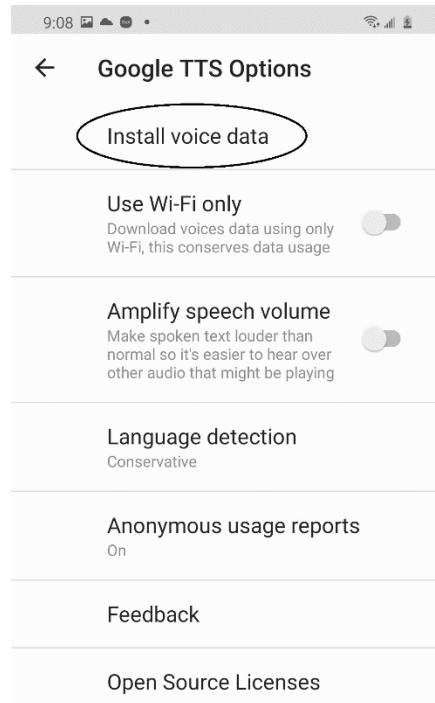


Fig. 3 Google TTS Options with Install voice data highlighted

The next screen shows the list of all languages that are part of the Google Speech Services TTS package. Scroll through the list and locate the entry French (France) and select it (Fig. 4).

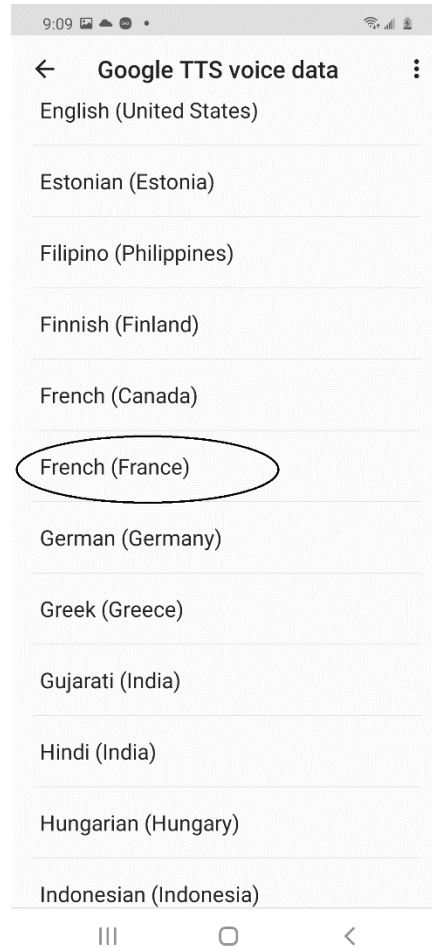


Fig. 4 List of languages with French (France) highlighted

The next screen will show the status of the speech data for that language. If the speech data has not been downloaded yet, the screen will show a download button and the size of the speech data (Fig. 5).

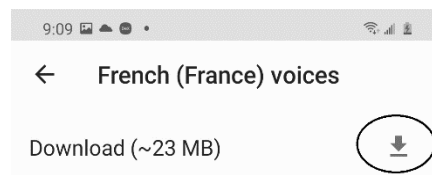


Fig. 5 French voices screen with download button highlighted

Select the download button to initiate the download of the French speech data. When that is complete, the screen will change and show a list of voices available for selection. Choose one as the default voice (Fig. 6).

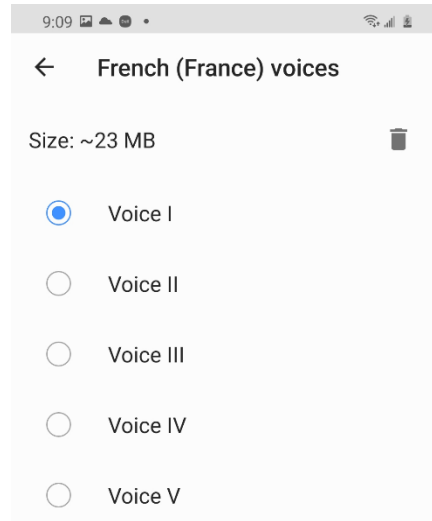


Fig. 6 French voices screen with speech data downloaded and voice selected

Once a voice has been selected, the process is complete for that language. If desired at a later time, the speech data for a language may be deleted by selecting the delete button (trashcan icon).

Repeat the process for Ukrainian (Ukraine) by going back to the list of languages, scrolling down to select Ukrainian (Ukraine) in the list (Fig. 7), then downloading the speech data (Fig. 8), and then selecting a voice (note that there is only one choice for Ukrainian, Fig. 9).

As new languages are added to ULTRA, it may be necessary to repeat these steps again if the TTS for that language pack uses the Google TTS.

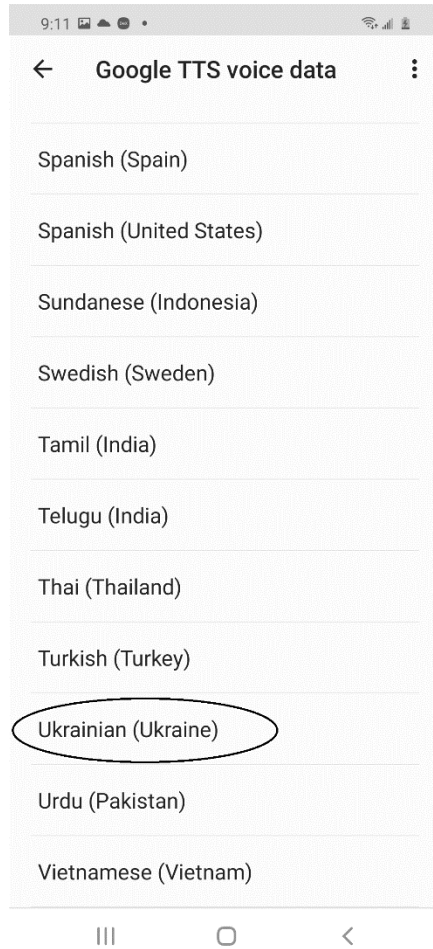


Fig. 7 List of languages with Ukrainian (Ukraine) highlighted

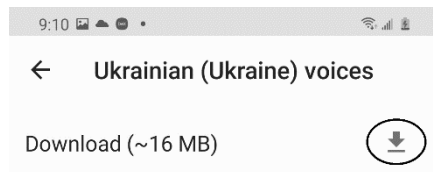


Fig. 8 Ukrainian voices screen with download button highlighted

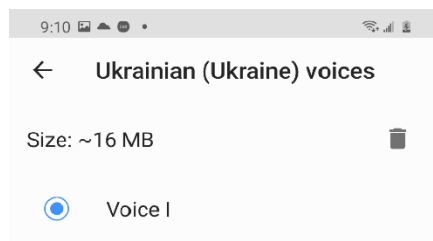


Fig. 9 Ukrainian voices screen with speech data downloaded and voice selected

4. Conclusion

The US Army Combat Capabilities Development Command (DEVCOM) Army Research Laboratory's Shareable Components team uses Google Speech Services for TTS of certain languages when speech data for that language is well-known and established. Also, using the existing and well-established technology provided by Google provides a rapid means of putting together a new language pack. This speech data needs to be downloaded to the phone locally in order to be available for use when the phone is disconnected from the internet.

The DEVCOM Army Research Laboratory's Shareable Components team continues to develop new language capabilities and improve existing languages. The Shareable Component FastSpeech2 TTS service has been designed to perform TTS locally from the outset. New languages are under development for that component that will not require the steps outlined in this document.

5. References

1. Schlesiger C. Shareable components services and universal language translator (ULTRA) installation on an Android phone. DEVCOM Army Research Laboratory; 2021 Sep. Report No.: ARL-TN-1081.

List of Symbols, Abbreviations, and Acronyms

ARL	Army Research Laboratory
DEVCOM	US Army Combat Capabilities Development Command
TTS	text-to-speech
ULTRA	Universal Language Translator

1 DEFENSE TECHNICAL
(PDF) INFORMATION CTR
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1 DEVCOM ARL
(PDF) FCDD RLD DCI
TECH LIB

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