



OVERVIEW

Government Solutions



The need to analyze data gathered from low-quality telephony audio sources, in multiple languages, is mission critical for many government agencies.

THE PROBLEM

A considerable amount of audio recorded by agencies is poor quality, in various languages, and is being analyzed using only metadata that is often incomplete or unreliable. This leads to a very inefficient search process where significant time is spent listening to audio data that is not relevant.

Agencies responsible for identifying and assessing current and future threats understand that the information they uncover is time sensitive and loses its value if it takes too long to extract.

Traditional audio search methods translate audio content to a text file for review. The effectiveness of these text-based systems is low, and relies on several factors, including:

- accuracy of the speech-to-text translation
- extensive dictionaries for each language
- exact spelling of search terms
- standard vocabulary limitations such as proper names and slang

THE NEXIDIA SOLUTION

Nexidia enables armed forces organizations, homeland security,

and law enforcement to tap into the massive amounts of recorded audio communications at the fastest speeds, highest accuracy and with the most flexible deployment options.

Agencies can now index large amounts of recorded audio from phone calls, wire taps, computer voicemail or radio communications, making content instantly searchable. By eliminating the need to translate speech to text, and then mining that text, Nexidia provides indexing speeds never before imagined.

Nexidia can instantly search any spoken word, enabling the timely identification of relevant threats and trends, and empowering agencies to immediately respond with preventative, protective action. The patented phonetic search technology enables searches on proper names, inexact spellings, industry terms, jargons, slang and colloquialisms—all without extensive training, large dictionaries or vocabulary updates. Nexidia's extensive language capabilities leverage the linguist by delivering highly accurate results regardless of the speakers' gender, age, dialect, accent or speaking style.

The technology is designed for rapid integration with existing IT infrastructures as a distributed, server-side solution that can process large amounts of audio feeds and archived data. Alternatively, it is easily deployed as a standalone solution on a small tactical laptop in the field.

NEXIDIA'S EXTENSIVE LANGUAGE CAPABILITIES

Nexidia supports more than 35 languages and dialects. Language models are created with representative audio that provides a robust language recognition capability out of the box. Language support can also be further refined using Nexidia's extensible language tuning framework. Because the technology does not require a dictionary, new language capabilities can be developed relatively quickly.

How it Works

INGESTION

Nexidia ingests the audio files at a rate of 207 times faster than real-time per CPU core. An index file is created called a PAT (phonetic audio track) file. This file is essentially a time-aligned index of phonetic content that is accessed when searches and queries are performed. The original audio file is in no way changed or manipulated by the ingestion process. This indexing process only takes place once and there is no need to re-index based on new search requirements. PAT files are roughly 6-8% of the original size of a standard wav file.

SEARCH

For large scale, ad-hoc searching, Nexidia's recent advances make it possible to search 100 million times faster than real time. This means 100,000 hours of audio are searchable in 3.3 seconds. Given the architecture and performance

of the technology, near real-time monitoring and searching can be reached. This means that positive hits can be produced just seconds after a term or phrase of interest has been spoken. Search results that meet pre-assigned thresholds can be used as alerting or notification mechanisms. It is also possible to compile search results and generate into charts, trends and analysis reports.

SCALABILITY

Nexidia's high rate of index extends scalability in many directions. The lightweight architecture allows the technology to be deployed as a standalone solution on a small tactical laptop, or as a distributed, server-side solution processing large amounts of audio feeds and/or archived data. To increase through-put, Nexidia's core index and search capabilities scale efficiently in a multi-threaded, multiple processor configuration. Additionally, Nexidia's solutions can be designed with service-oriented architecture (SOA) concepts in mind.

FLEXIBILITY

Nexidia uses industry standards and provides access to the servers and/or engines through open API's wherever possible. Nexidia can be used for simple keyword spotting or phrase searches as well as complex Boolean-operated queries. This powerful phonetic search engine delivers relevant data from both poor quality audio, such as cell phones, and high quality sources, such as broadcast audio.

INCREASED ACCURACY

Nexidia enables searches on proper names, inexact spellings, industry terms, jargon, slang and colloquialisms, without extensive training, large dictionaries or vocabulary updates. The language packs are trained on at least a thousand different speakers with various accents and background, making a very robust language pack that increases search result accuracy.

RELEVANCY

Nexidia utilizes advanced search techniques to increase the accuracy and relevancy of search results, which improves end-user productivity. This technology is a true force-multiplier where it has been applied. Users can focus on their targeted objectives rather than waste time listening to irrelevant data. With Nexidia, intelligent mining becomes possible, where queries are constructed to include and exclude audio data, based on relevancy.

Other Products & Features

LANGUAGE ID

Nexidia's Language Identification technology is used to recognize languages and even dialects for any language. This technology can also be used to distinguish voice from music and other sounds such as faxes, DTMF or silence in recordings, and when properly implemented can identify when a speaker switches to another language. The training capability allows new language models to be built easily to suit specific needs.

OPTIMIZATION OF SEARCH TERMS

Sometimes analysts are required to review audio from a language that is less familiar to them, or audio that contains terms and phrases outside of their normal vocabulary. Nexidia provides a method to optimize search terms based on identifying actual search results in target recordings. By running test searches and selecting those results that contain the desired terms, Nexidia will automatically create a new query based on the true pronunciation of those terms, and apply this search to the entire body of recordings. This approach can even be used to uncover phrases that are spoken in a mixed-language environment, without having to index the recordings for each given language.

Rather than retroactively reacting to threats that have already transpired, the Nexidia technology identifies critical intelligence to enable proactive, preventative action. Nexidia enables armed forces organizations, homeland security, and law enforcement to tap into the massive amounts of recorded audio communications at the fastest speeds, highest accuracy and with the most flexible deployment options.