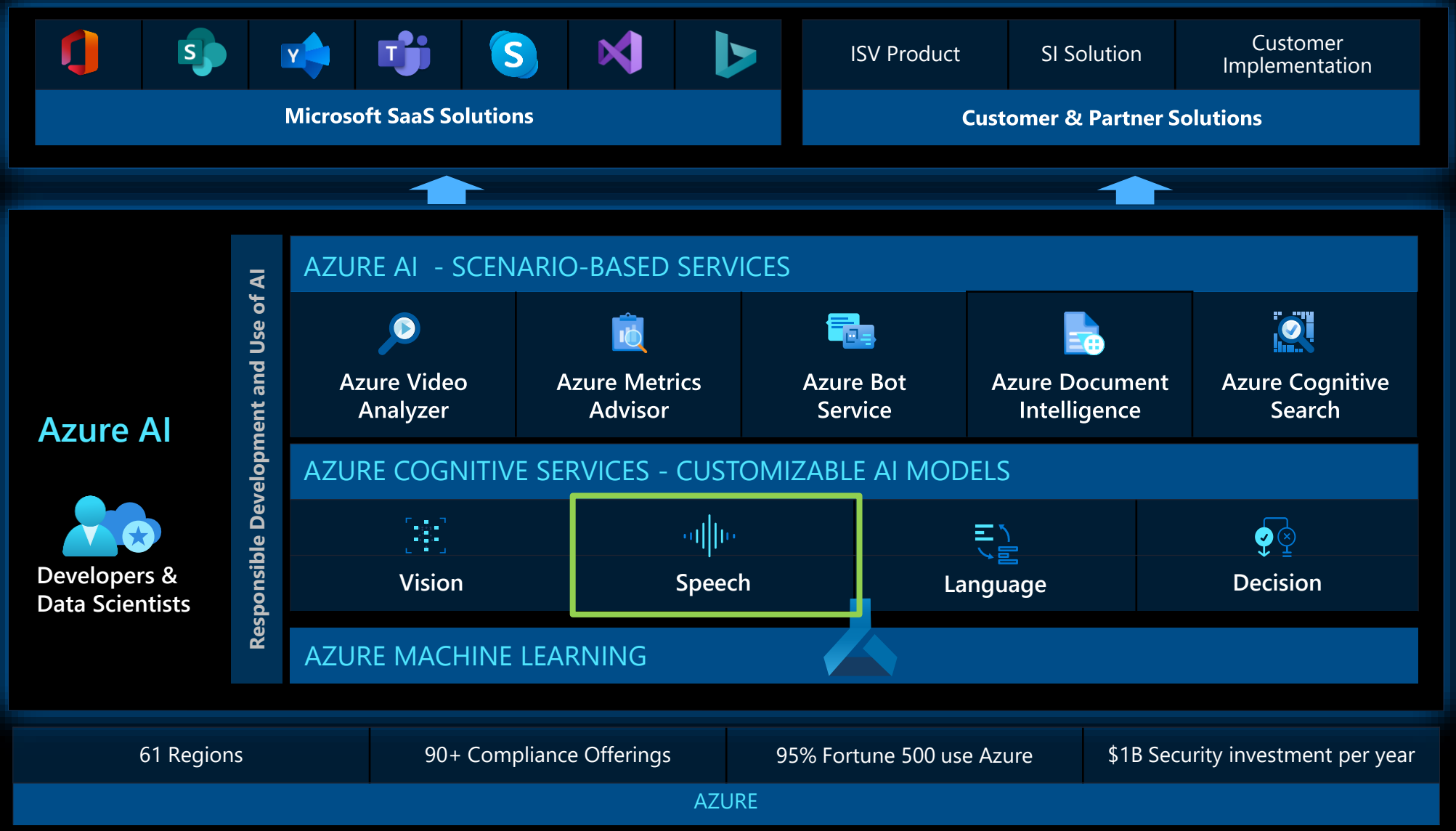
Microsoft Azure

Azure AI:
Speech Service Overview

Azure AI


Microsoft SaaS Solutions
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Azure AI
Developers & Data Scientists
Responsible Development and Use of AI
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Azure Video Analyzer
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Speech Service Overview

The Speech service provides speech to text and text to speech capabilities with a Speech resource. You can transcribe speech to text with high accuracy, produce natural-sounding text to speech voices, translate spoken audio, and use speaker recognition during conversations.

Speech capabilities

Speech to text

Text to speech

Speech Translation

Language identification

Speaker recognition

https://learn.microsoft.com/en-us/azure/ai-services/speech-service/overview

Speech Service Overview

Common scenarios for speech include:

•Captioning: Learn how to synchronize captions with your input audio, apply profanity filters, get partial results, apply customizations, and identify spoken languages for multilingual scenarios.

•Audio Content Creation: You can use neural voices to make interactions with chatbots and voice assistants more natural and engaging, convert digital texts such as e-books into audiobooks and enhance in-car navigation systems.

•Call Center: Transcribe calls in real-time or process a batch of calls, redact personally identifying information, and extract insights such as sentiment to help with your call center use case.

•Language learning: Provide pronunciation assessment feedback to language learners, support real-time transcription for remote learning conversations, and read aloud teaching materials with neural voices.

•Voice assistants: Create natural, humanlike conversational interfaces for their applications and experiences. The voice assistant feature provides fast, reliable interaction between a device and an assistant implementation.

Speech Service Overview

Microsoft uses Speech for many scenarios, such as captioning in Teams, dictation in Office 365, and Read Aloud in the Edge browser.

Sales / Support

Live captions

Subtitles/ Translation

Read aloud

Dictation

Commute

Cortana

AZURE SPEECH

Speech Service Features

Speech to text

Real-time speech to text

With real-time speech to text, the audio is transcribed as speech is recognized from a microphone or file. Use real-time speech to text for applications that need to transcribe audio in real-time such as:

- Transcriptions, captions, or subtitles for live meetings
- Diarization
- Pronunciation assessment
- Contact center agent assist
- Dictation
- Voice agents

Real-time speech to text is available via the Speech SDK and the Speech CLI.

Batch transcription

Batch transcription is used to transcribe a large amount of audio in storage. You can point to audio files with a shared access signature (SAS) URI and asynchronously receive transcription results. Use batch transcription for applications that need to transcribe audio in bulk such as:

- Transcriptions, captions, or subtitles for pre-recorded audio
- Contact center post-call analytics
- Diarization

Custom Speech

With Custom Speech, you can evaluate and improve the accuracy of speech recognition for your applications and products. A custom speech model can be used for real-time speech to text, speech translation, and batch transcription.

Speech Service Features

Text to speech

The text to speech feature of the Speech service on Azure has been fully upgraded to the **neural text to speech engine.** This engine uses deep neural networks to make the voices of computers nearly indistinguishable from the recordings of people. With the clear articulation of words, neural text to speech significantly reduces listening fatigue when users interact with AI systems.

The patterns of stress and intonation in spoken language are called ***prosody***. Traditional text to speech systems break down prosody into separate linguistic analysis and acoustic prediction steps that are governed by independent models. That can result in muffled, buzzy voice synthesis.

Text to speech features

- **Real-time speech synthesis**: Use the Speech SDK or REST API to convert text to speech by using prebuilt neural voices or custom neural voices.
- **Asynchronous synthesis of long audio**: Use the batch synthesis API (Preview) to asynchronously synthesize text to speech files longer than 10 minutes (for example, audio books or lectures).
- **Prebuilt neural voices:** Each prebuilt neural voice model is available at 24kHz and high-fidelity 48kHz.
- **Fine-tuning text to speech output with SSML:** Speech Synthesis Markup Language (SSML) is an XML-based markup language that's used to customize text to speech outputs. With SSML, you can adjust pitch, add pauses, improve pronunciation, change speaking rate, adjust volume, and attribute multiple voices to a single document.
- **Visemes:** Visemes are the key poses in observed speech, including the position of the lips, jaw, and tongue in producing a particular phoneme. Visemes have a strong correlation with voices and phonemes.

Speech Service Features

Speech Translation

By using the Speech SDK or Speech CLI, you can give your applications, tools, and devices access to source transcriptions and translation outputs for the provided audio. Interim transcription and translation results are returned as speech is detected, and the final results can be converted into synthesized speech.

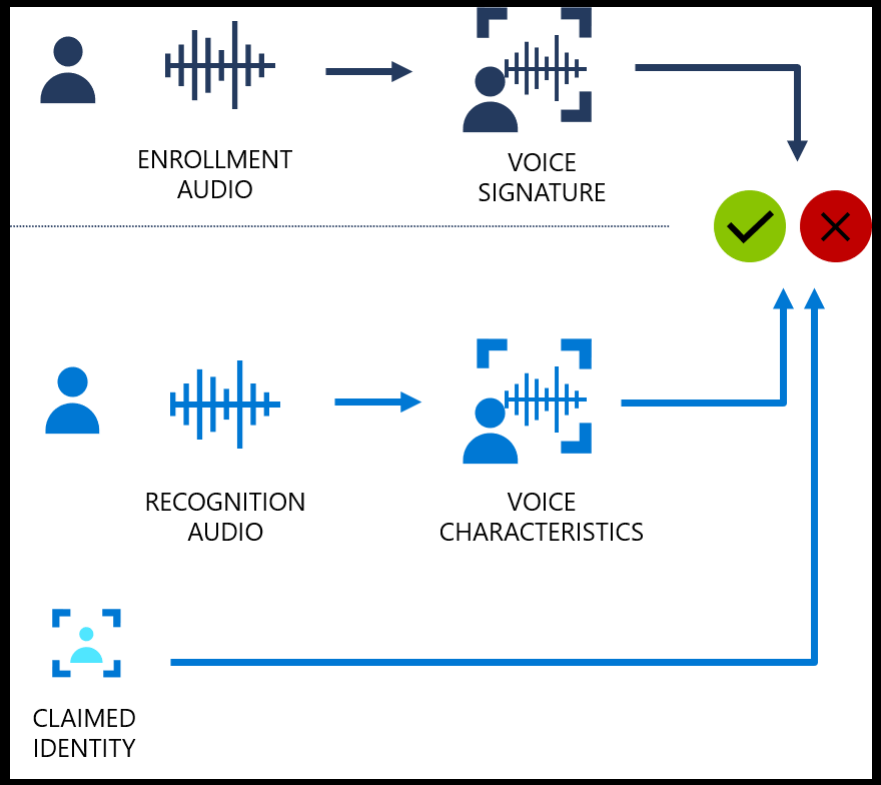
Speech Translaton Core features

- Speech to text translation with recognition results.
- Speech-to-speech translation.
- Support for translation to multiple target languages.
- Interim recognition and translation results.

Speech Service Features

Speaker Recognition

Speaker recognition can help determine who is speaking in an audio clip. The service can verify and identify speakers by their unique voice characteristics, by using voice biometry.

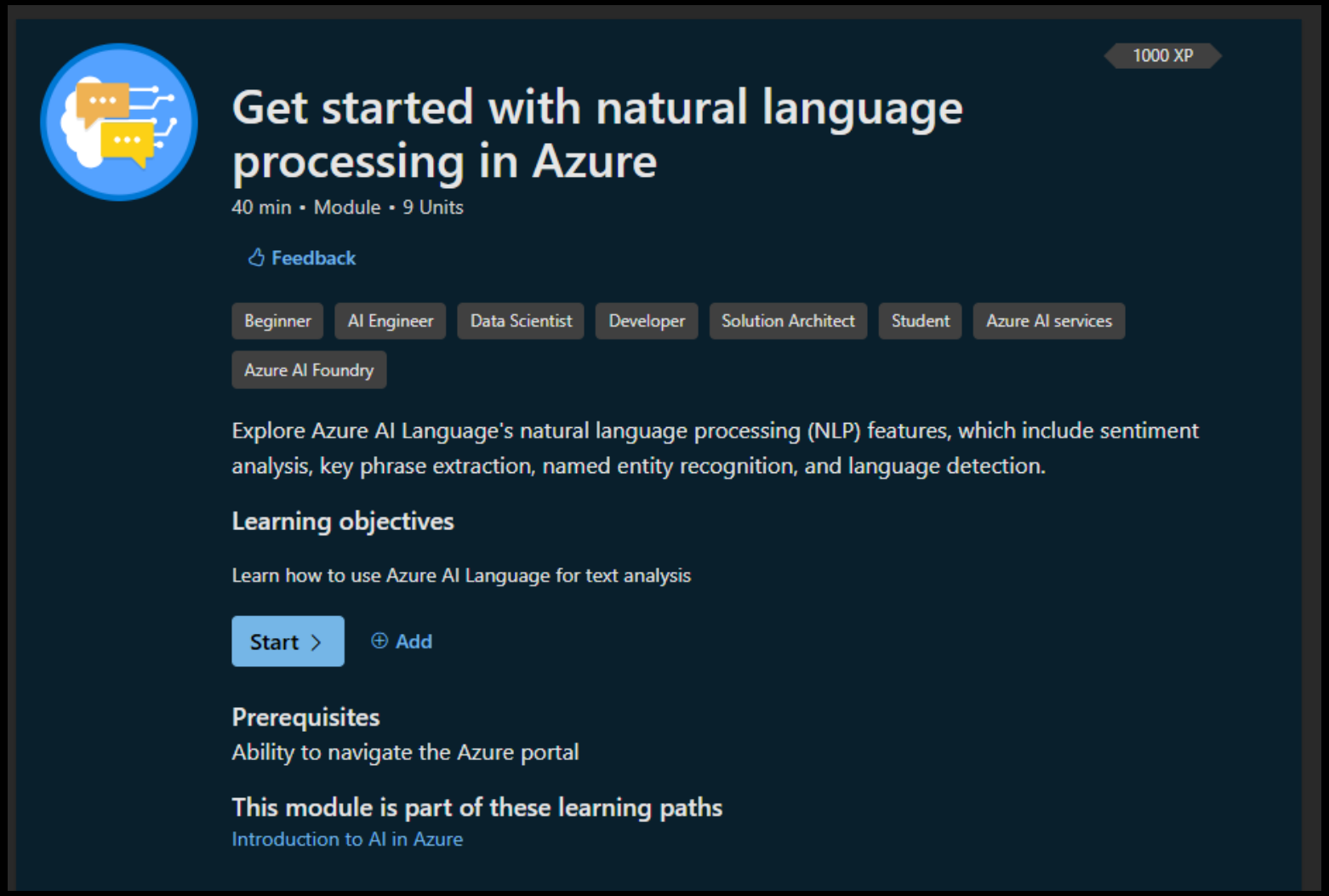


Speaker verification can be either text-dependent or text-independent. Text-dependent verification means that speakers need to choose the same passphrase to use during both enrollment and verification phases. Text-independent verification means that speakers can speak in everyday language in the enrollment and verification phrases.

For text-dependent verification, the speaker's voice is enrolled by saying a passphrase from a set of predefined phrases. Voice features are extracted from the audio recording to form a unique voice signature, and the chosen passphrase is also recognized. Together, the voice signature and the passphrase are used to verify the speaker.

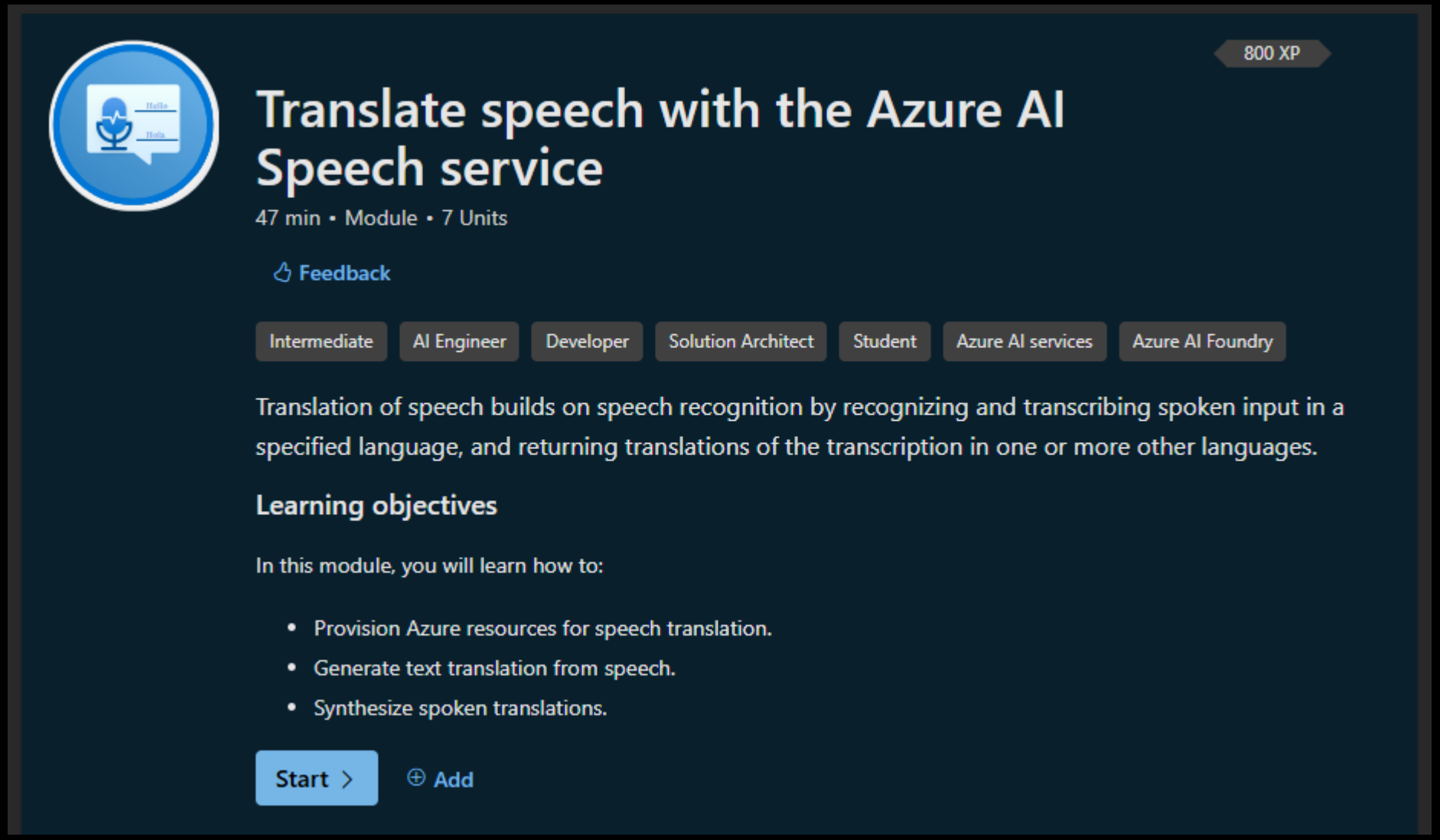
Text-independent verification has no restrictions on what the speaker says during enrollment, besides the initial activation phrase when active enrollment is enabled. It doesn't have any restrictions on the audio sample to be verified, because it only extracts voice features to score similarity.

Exercice 1



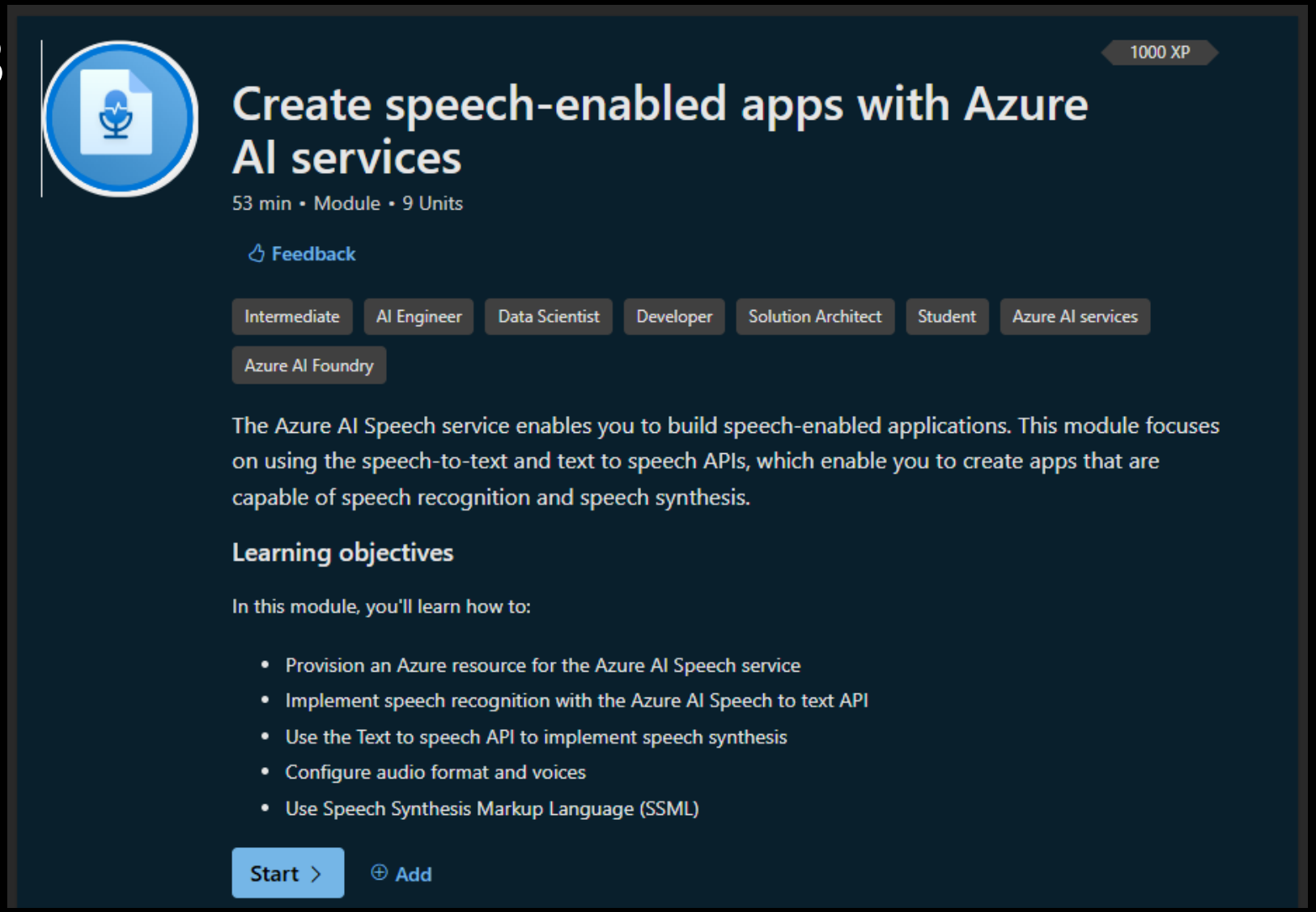
https://learn.microsoft.com/en-us/training/modules/get-started-language-azure/

Exercice 2



https://learn.microsoft.com/en-us/training/modules/translate-speech-speech-service/

Exercice 3



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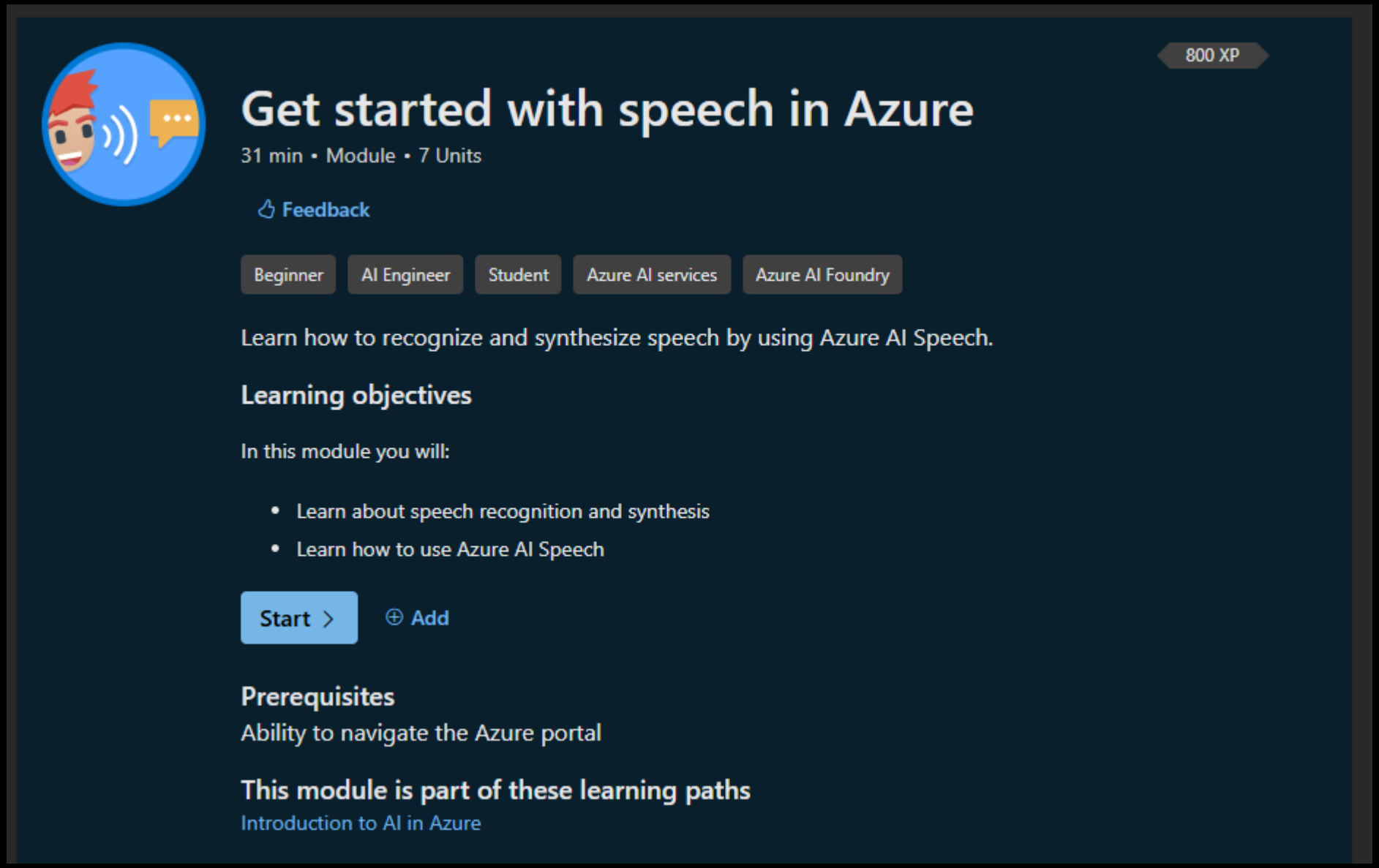
Exercice 4



https://learn.microsoft.com/en-us/training/modules/recognize-synthesize-speech/

Microsoft Azure

Invent with purpose.

Thank you