Cyberon
Leading Speech Solution Provider

RA Ecosystem Partner Solution

Cyberon Speaker Verification CNSV

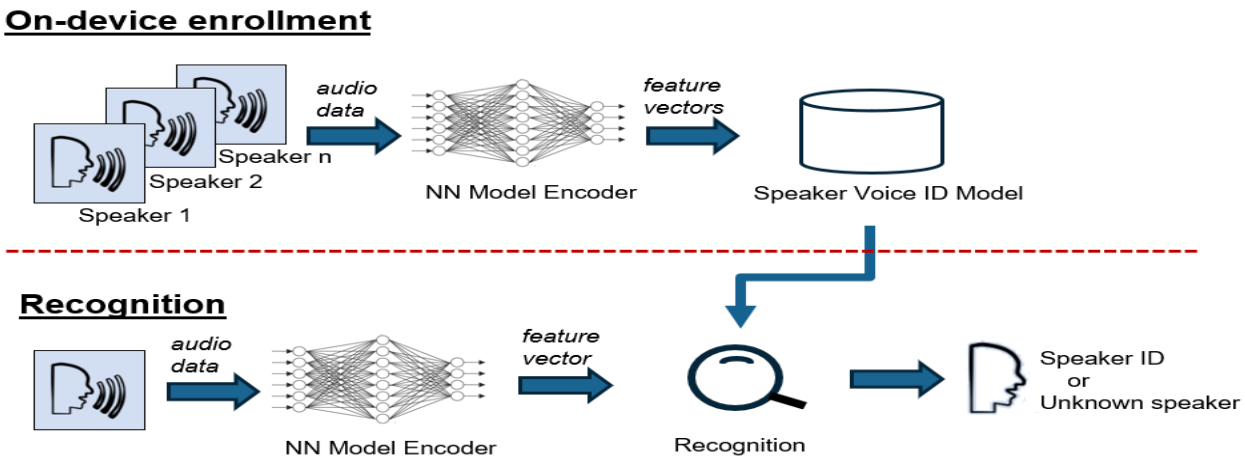
Solution Summary

Cyberon Neural Network model-based Speaker Verification(CNSV) is a speaker identification solution on MCU platform. CNSV has no constrain on speech content with low recognition error rates and delivers high robustness by Neural Networks model. It supports multiple speaker identification depending on system resources. Available now for RA8M1 and RA6E1 of Renesas MCUs.

Features/Benefits

- Utilizing Arm® CMSIS-NN to enhance computation efficiency on Cortex® -M MCU
- Enables identification among multiple registered speakers
- Text-independent solution
- No network connection is needed
- Low recognition error rates and high robustness by Neural Networks model
- Small memory footprint ~~and~~ with multiple options (Flash:715KB ~ 900KB, RAM:200KB ~ 245KB)
- Higher recognition performance with optimization by Arm Helium™ on RA8
- Low power and high efficiency MCU with strong security function
- Combination with Cyberon Dspotter or DspotterNLU provide more comprehensive voice solution

Diagrams/Graphics



Target Markets and Applications

- IoT devices
- Home appliances
- Wearable devices/Hearable devices

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About Us

Cyberon Corporation, founded in 2000, with its headquarter in Taipei, Taiwan, is a leading embedded speech solution provider and supported by experts experienced in Speech Recognition and Text-to-Speech technologies for tens of years. Cyberon's speech solution is developed specifically for mobile & portable devices to provide users a convenient, natural and reliable user experience.

We not only commit ourselves to deliver highly reliable products, but ensure partners to acquire professional and real-time support. Developers can integrate our solutions with minimal effort. Furthermore, Cyberon's ability in customization gives our partners more ideas to show differentiation in today's competitive market.

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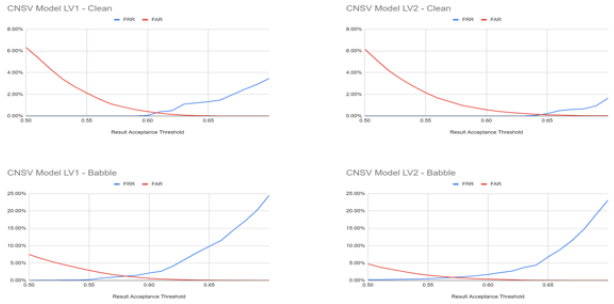
Resource Requirement

Model Level		Level 1 (small model)	Level 2 (large model)
Code	CNSV	33 KB	
	TFLite-Micro	491 KB	
Data	NN Model	191 KB	301 KB
	Speaker Model	1.1 KB * N	
RAM	CNSV	78 KB + 1.1 KB * N	
	TFLite-Micro	120 KB	165 KB
Computation(*)	Arm CM33 (RA6)	12.2 MCPS + (82 ~ 116)M Cycles	12.2 MCPS + (137 ~ 195)M Cycles
	Arm CM85 (RA8)	4.7 MCPS + (27 ~ 38)M Cycles	4.7 MCPS + (45 ~ 64)M Cycles

Recognition Performance

FAR/FRR **equal error rate** of speaker verification:

CNSV Model	Level 1	Level 2
Clean	0.26%	0.12%
Noisy (Babble SNR 10dB)	1.23%	0.83%



Rich Applications/Markets