

AI-Powered

Real-Time Noise Suppression for Edge and Embedded Systems

Overview:

Meeami Technologies's Noise Suppression solution is a cutting-edge AI-powered engine designed to eliminate ambient noise and improve speech clarity in real-time. Built for deployment on edge devices, embedded platforms, and AI accelerators such as NPUs and GPUs, it offers superior audio quality even in the most challenging acoustic environments.

Outcomes & Transformations

- **Compact and Lightweight Model:**
Optimized for real-time performance on low-power edge platforms and embedded devices.
- **NPU and GPU Compatible:**
Successfully ported to AMD Ryzen AI NPUs with CPU-NPU shared inference, enabling efficient edge processing.
- **High Audio Quality:**
Achieves industry-standard speech clarity scores, with POLQA scores reaching up to 3.53 (Float model) and 2.44 (Quantized model).
- **Flexible Deployment:**
Supports ONNX and TensorFlow Lite formats with quantization and calibration support.

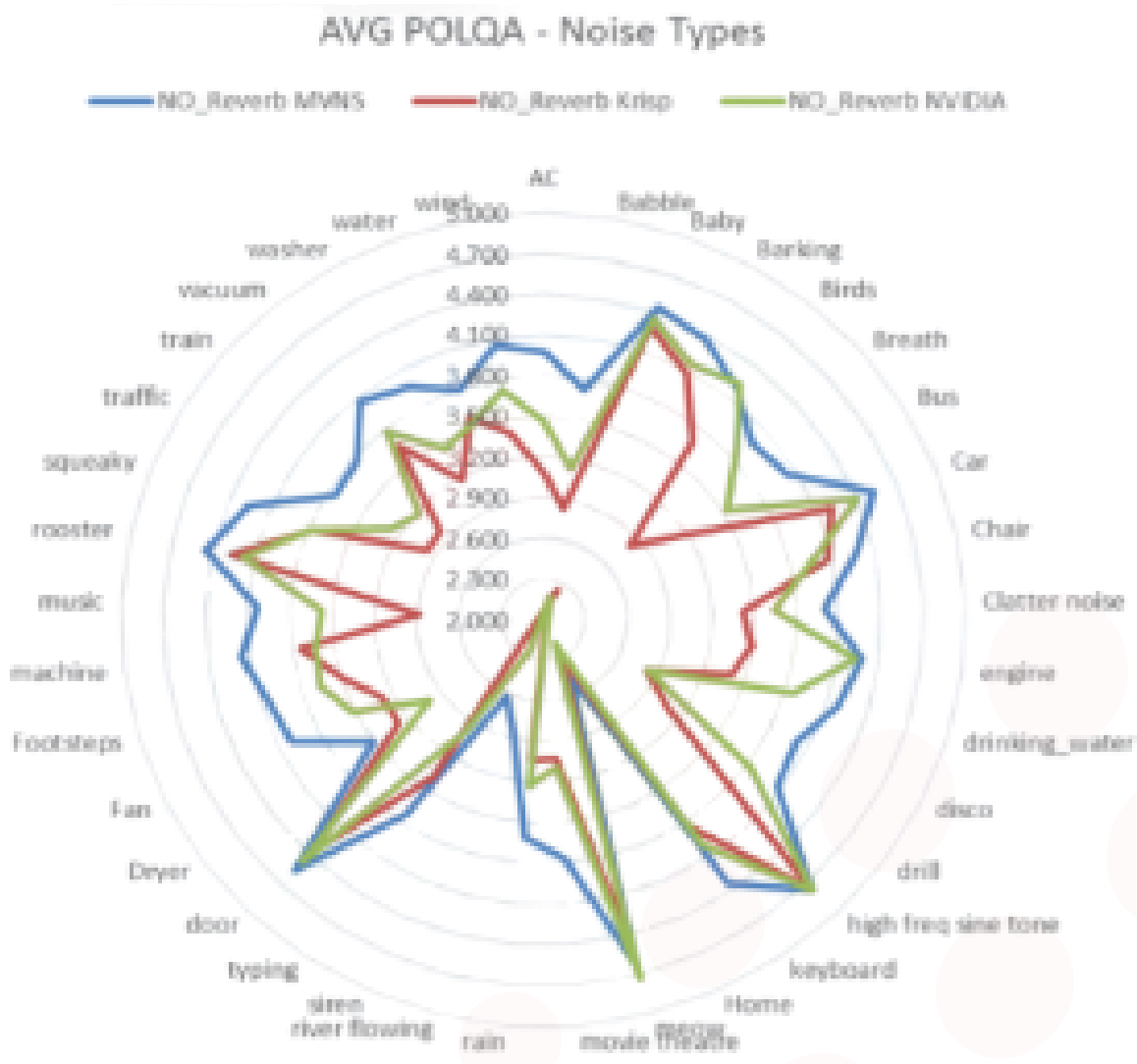
Technical Specifications

Parameter	Value/Details
Input Sample Rate	All Standard Sample Rates. i.e., 16 kHz and 48 kHz
Model Type	MVNS-V7 (Multi-Variate Noise Suppression)
Frameworks	PyTorch, TensorFlow, ONNX
Architecture	Conv2D + GRU + Conv2DTra
Average POLQA Score (Float)	Depends on Model. Ranges from 3 to 3.7.

Model MACs	385M
Latency	Optimized for real-time (<100ms)
Platforms Supported	AMD Ryzen 9 7940HS, embedded NPU, edge devices

Deployment Notes

- Successfully ported and validated on AMD Ryzen AI NPU platforms.
- Overcame TensorFlow model deployment limitations using ONNX conversion and calibration techniques.
- Real-time inference with optimized quantization using AMD AI Analyzer tools.
- Demonstrated performance trade-offs on CPU-NPU shared inference but within acceptable limits



Model Details

	Catalogue	Total. Memory Required (KB)	MACs (M)	Model Type	Target Arch/ Platform	OS	CPU
MVNS Gen 1	High Quality	7363	230	Float	x86	Windows 10	50 MHz
	High Quality	7363	230	Float	ARMv8	Android	100MHz
	High Quality, 8 bit	1812	230	Integer	x86	Windows 10	100 MHz
	High Quality, 8 bit	1751	230	Float	Knowles [2 x IA8201A] HiFi3	Bare Metal	246MHz
	Low Complexity, 8 bit	1100	35	Integer	TI OMAP L138	Bare Metal	110MHz
MVNS Gen 2	Low Complexity	1200	100	Float	x86	Windows 10	20MHz
	High Quality	8000	400	Float	x86	Windows 10	100MHz
	High Quality, 8 bit	2000	400	Integer	x86	Windows 10	200MHz
	Low Complexity, 8 bit	300	24	Integer	Cadence HiFi Mini	Bare Metal	150MHz

Request a Demo or SDK

Contact us to explore integration, evaluation SDKs, or to schedule a demo:
sales@meeamitech.com