Application Examples for Use with Reality AI Explorer Tier

Introduction

Reality AI Explorer Tier is a comprehensive, self-guided evaluation sandbox released as a free version of the popular Reality AI Tools. This application note outlines the various real-life application examples are available within the Reality AI Explorer Tier.
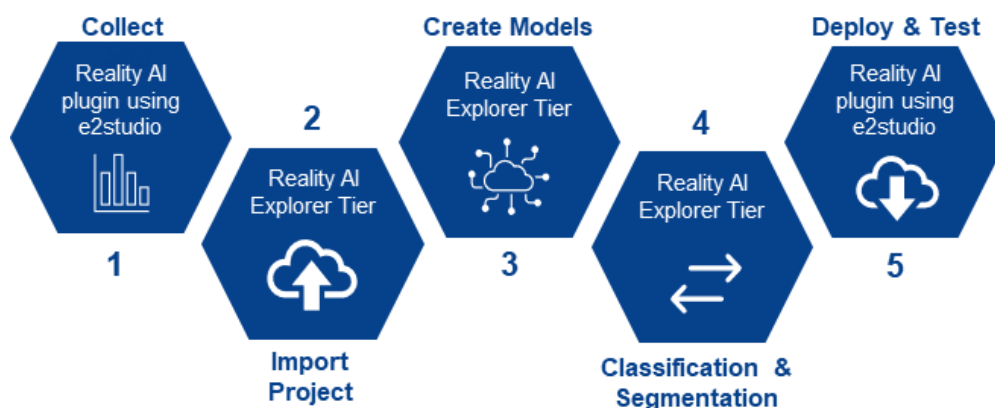
Contents

1. Benefit

- Straightforward and Minimal for developers to generate AI models.
- Experience simple AI model generation workflow using Reality AI Explorer on Renesas hardware.

2. Project Workflow

3. BABY CRY

Baby monitors are invaluable for new parents and caregivers, providing extra safety and support to promptly meet a baby's needs. They are especially useful for parents with multiple children or those who can't be in the same room. However, the cost can limit accessibility for some users. Baby Cry Detection is the out-of-the-box application examples with data sets for developers to go through the full process of AI model generation from the development to testing, allows developers to an optimized and cost efficient hardware.

1. **Sound Detection:** Use microphone in the [RA6E1 Voice Kit](#) to continuously monitor ambient sounds.

2. **Data Collection:** System gathers environmental sounds using Reality AI Data Storage Tool in e2studio IDE.

3. **Signal Processing:** Captures audio signals preprocessed to remove noise and enhance the relevant features of the sound and extracts the baby cry as a distinct acoustic characteristics that can be identified.

4. **Model Training:** Recorded audio data segmented into small, manageable chunks for training the AI model with Reality AI Tools.

5. **Deployment:** Trained AI model integrated into the e2studio project and deployed onto the RA6E1 Voice Kit hardware. **Alert Generation:** AI model classifies the incoming sounds as either "baby cry" or "everything else" based on the learned patterns. When a baby cry is detected, the system can trigger an alert, such as sending a notification to a parent's or caregiver's smartphone or activating a connected device.

6. **Testing and Validation:** System's performance is tested in real-time using the Reality AI Live Monitor to ensure accurate detection of baby cries.
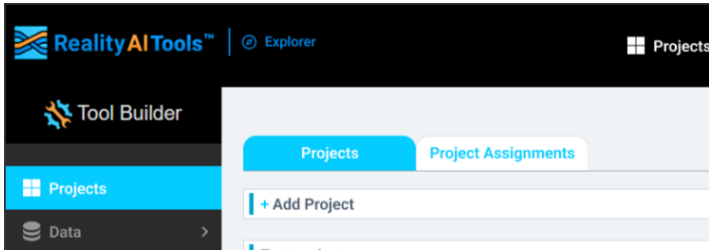
4. GLASS BREAK

As the name promises, glass breaking detection is one of your least wish to happen but at the same time, is the crucial block to detect whenever it comes to reality. It is an essential part of safety set ups everywhere starting from home, office, buildings, cars, and more.

1. **Sound Detection:** Microphone used to continuously monitor ambient sounds. When a sound is detected, it is captured and converted into a digital signal.

2. **Signal Processing:** captured sound preprocessed to remove noise and enhance relevant features of the sound. Feature Extraction: key features of the sound such as frequency, amplitude, and duration, are extracted. Breaking glass has distinct acoustic characteristics that can be identified.

3. **Pattern Recognition:** Trained on a dataset of glass break sounds and other environmental noises. Analyzes extracted features. Model classifies the sound as either a glass break or a non-glass break event based on the learned patterns.

4. **Model Generation to deploy into real-life use cases:**

o Decision Making: If the sound is classified as a glass break, the system triggers an alert.

o Notification: alert can be sent to a security system, monitoring service, or directly to the user via an app or other communication methods

If the model's performance is not satisfactory, additional data can be collected, and the model can be retrained to improve accuracy.

5. Set Up Prerequisites

1	**RA6E1 Voice Kit** • Request for free purchase from: **renesas.com/TW001-VUIA6E1POCZ**
2	**Renesas E2-Studio IDE 2024-07 or newer with FSP 5.6.** • Platform installer available here • Take note of where e2studio is installed.
3	**Account on the Reality AI Tools** Login to Reality AI Tools using the username and password provided. Or input the request form for 1month free access to Explorer Tier from Reality AI Explorer. Leave the browser open in the background.
	You are ready to start!

6. Contact

For more information and support, please visit Reality AI Explorer and/or request a demo.

7. Revision History

Revision	Date	Description
1.00	Apr 22, 2025	Initial release.