RZ Ecosystem Partner Solution
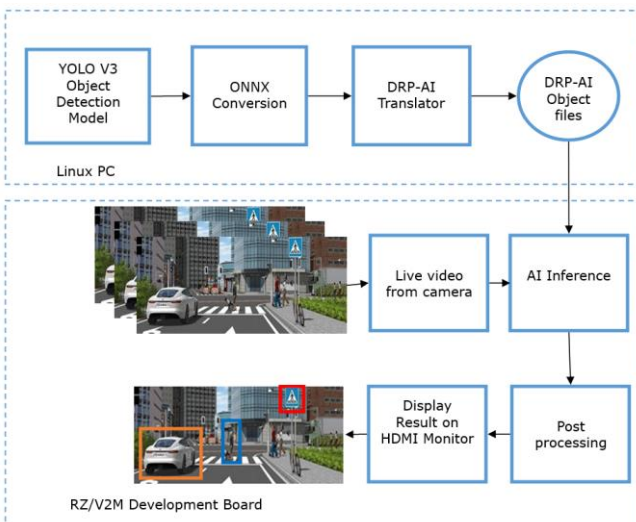
QuEST Smart Helmet AI Reference Solution

Solution Summary

Renesas:QuEST Global partnership allows our experts to leverage the power of RZ's advanced AI Platform to create next-generation solutions in vision, speech, time-series for our customers. To show case the AI capability of RZ/V2M in a platform, Quest Global developed a "Smart Helmet" PoC solution which can conduct object detection on the road.

Features/Benefits

- Yolo v3 based deep learning model
- Trained using COCO dataset
- Real time object detection capabilities
  - Car, Person, Bike, Truck, Bicycle, Train, Traffic signal and Four-footed animals
- Could be used as a reference solution to start with
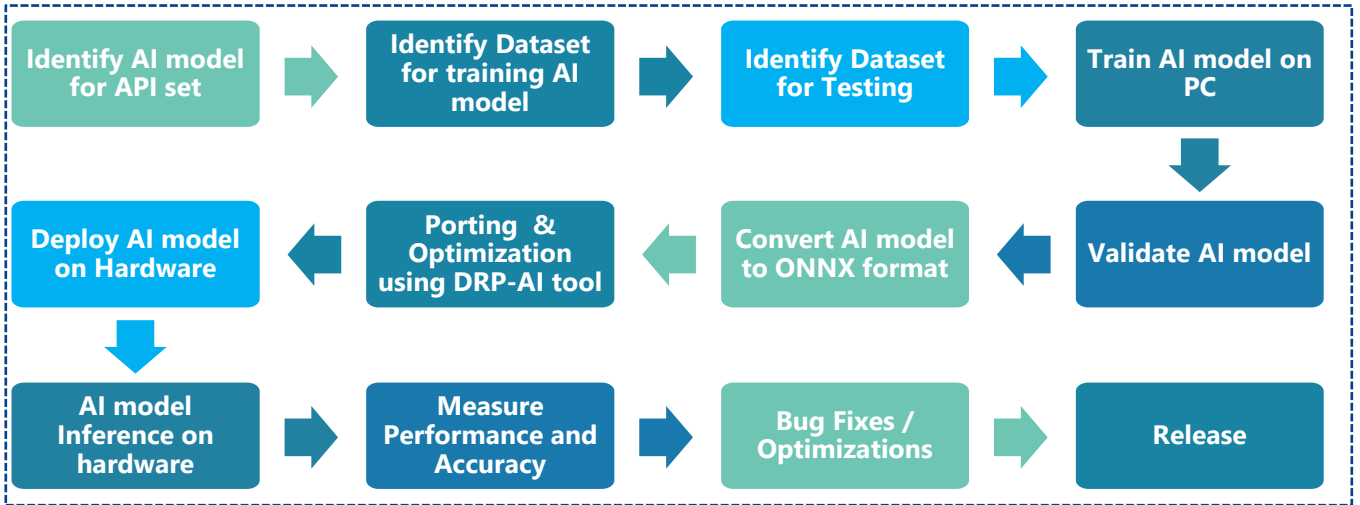
Diagrams/Graphics

Target Markets and Applications

- Traffic monitoring
- Surveillance, public safety on the road
- Smart bicycle
- Smart helmet for motorcycle

https://www.quest-global.com/services/digital-technology/artificial-intelligence/

2022.05

PoC to Productization Journey Supported by QuEST Global

Identify AI model for API set → Identify Dataset for training AI model → Identify Dataset for Testing → Train AI model on PC

Deploy AI model on Hardware ← Porting & Optimization using DRP-AI tool ← Convert AI model to ONNX format ← Validate AI model

AI model Inference on hardware → Measure Performance and Accuracy → Bug Fixes / Optimizations → Release

RZ Based PoC Raw Videos

https://youtu.be/05plcuVA1Vs (RZ Demo video1)
https://youtu.be/-OUjaaczq2k (RZ Demo video2)
https://youtu.be/rxLYhS6Sos4 (RZ output only)
https://youtu.be/vJi8FBS11NM (RZ output only)

Future Expansion Possibility supported by QuEST Global

Edge AI

- ☐ AI Network porting and Optimization on RZ
- ☐ Training AI Model using Open or 3rd party dataset
- ☐ Improve AI Accuracy to product level
- ☐ Multiple Camera to single Edge gateway implementation

AI based Application

- ☐ Vision Analytics based Application Development
- ☐ Dashboard Development

Cloud Connectivity

- ☐ Connect to various Cloud providers including AWS, Azure, GCP
- ☐ Leverage Edge + Cloud AI combination
- ☐ AI Model update over cloud

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