THE 4TH INDUSTRIAL REVOLUTION

AI Autonomous Vehicle Trainer

WOW SYSTEM

AI Algorithm implement
(Classification
& Object Detection)

Implement AI & Auto driving using Bready, Block coding specific software

Select
the High-performance
Hardware and Framework

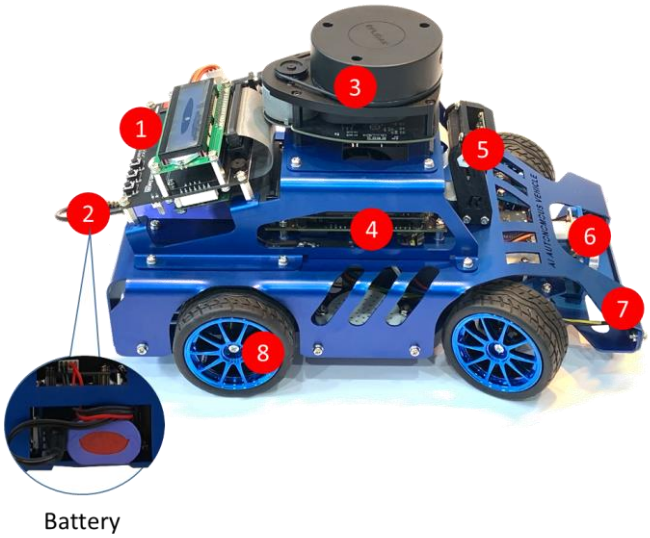
Improve AI skill
to adapt
AI vehicle platform

Features

1. Training the AI development & performance improve skill for Autonomous vehicle by practice the whole process of 'Data collect-Data processing-Create learn model-AI performance test'
2. Provide the block coding software, Bready for implement AI vehicle platform without difficult AI framework
3. Depend on block coding build, the python code automatically written at same time
4. Provide block coding source and Python code both for customized learning by user level
5. AI vehicle trainer implement autonomous driving by the classification and object detection algorithm to recognize traffic sign or signal, people, car, animals.
6. Lane tracking and driving implement through AI algorithm and OPEN CV both
7. Provide sample practice source per each process of 'Data collect-Data processing-Deep learning-Create AI model'
8. The user available to add a new model or object to implement customized driving environment
9. Lidar & PSD & U-sonic sensor built-in to detect the obstacles during drive

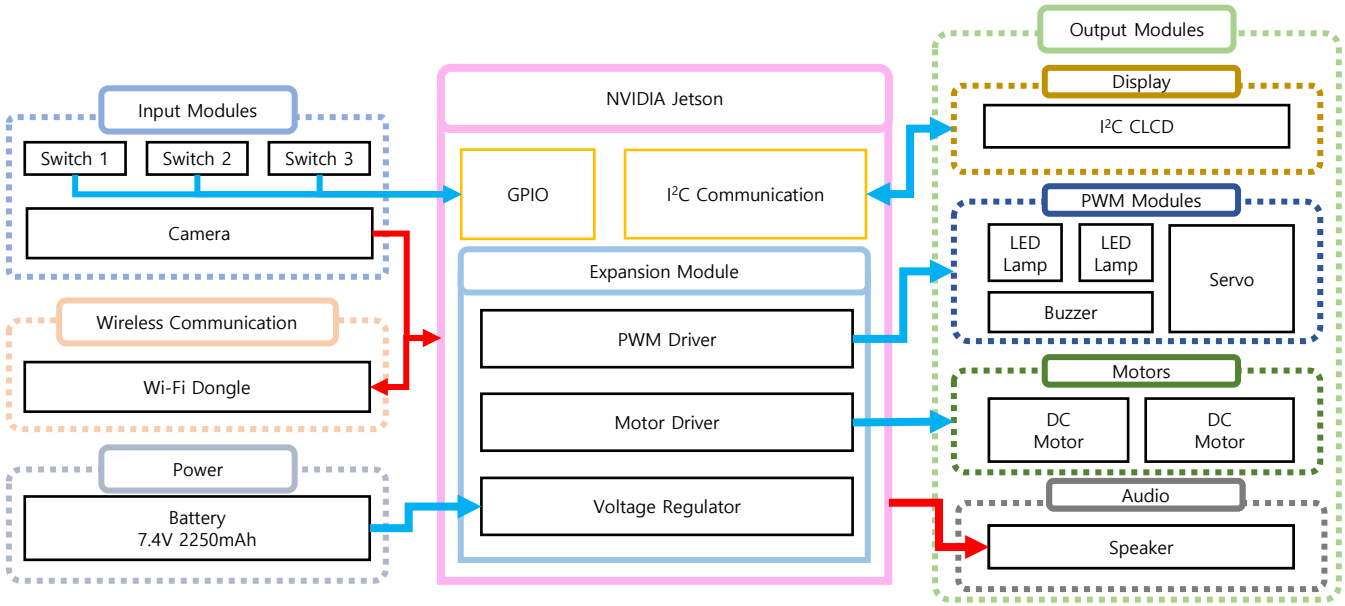
❖ Product Configuration

Overview



① Button / Display/ Alarm device
② Battery
③ Lidar Sensor
④ NVIDA Jetson Board
⑤ Camera
⑥ U-sonic Sensor
⑦ Main Frame
⑧ Steering device & Wheel

System Overview



Environment

[AI Algorithm]

[Bready, Block Coding]

[NVIDIA JETSON]

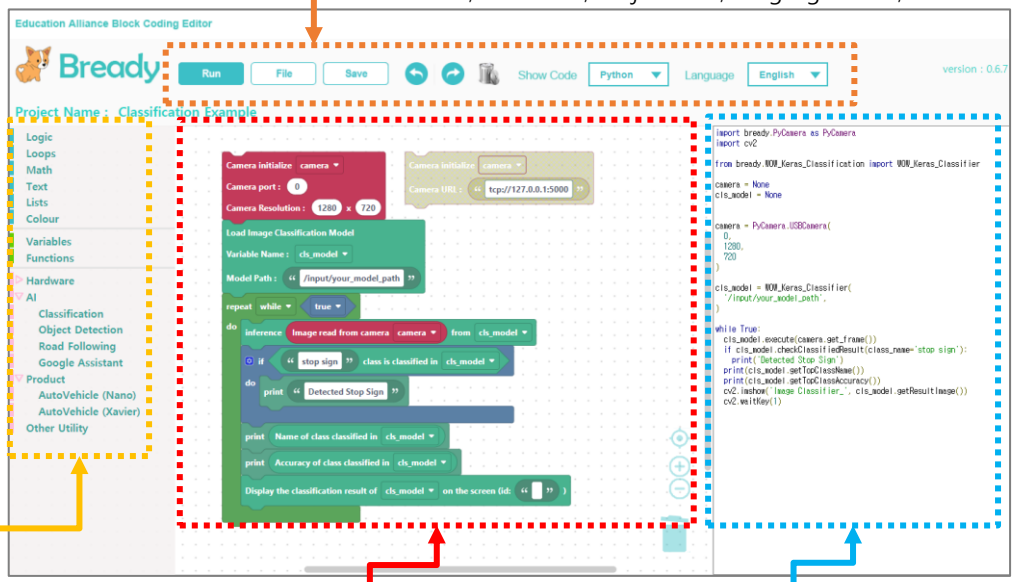
[OPEN CV]

❖ Product Configuration

‘Bready’, Block Coding Software

◎ **Menu Bar**

- Run, File Select, Project save, Language select, etc.



◎ **Block Menu**

- Block Basic menu
- AI Algorithm menu

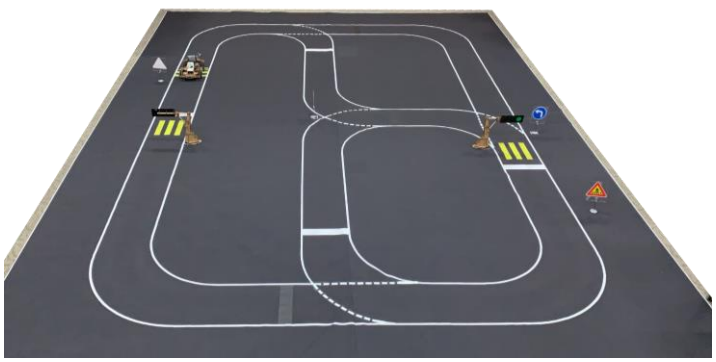
◎ **Block Edit window**

- AI content construct by block Drag & Top method

◎ **Python Code**

- The Python code is automatically written depend on the block.

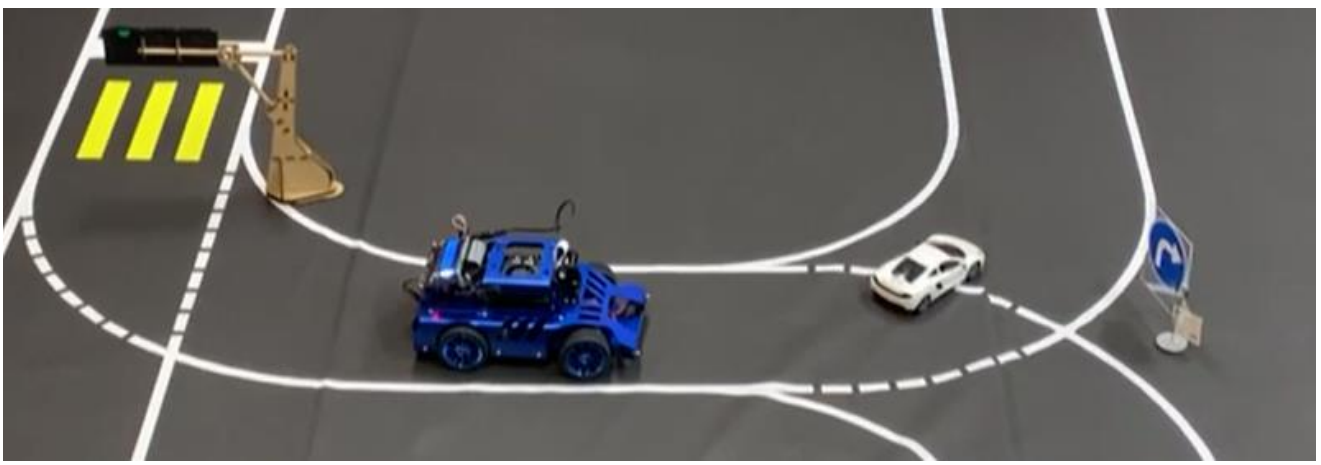
Track Device



◎ **Configuration**

(It can be change depend on customer)

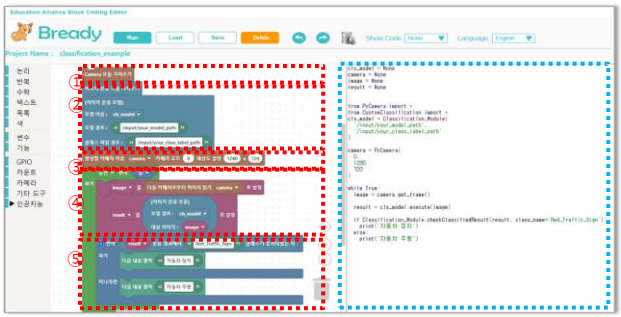
- **Size 600(W) x 500(D) (Material: fabric)**
- **Traffic sign & Traffic signal**
- **Object: : People & Animal & Vehicle**



❖ AI Algorithm implement using block coding software, Bready

Implement Autonomous driving

◎ Image Classification (Traffic sign Red/ Green)



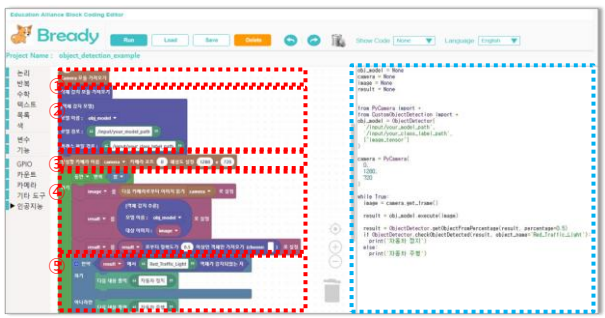
[Edit Block Coding]

[Python code written]

◎ How to implement

1. Create Camera category block
2. Load 'Classification model
   2-1. Model name: Classification algorithm model name
   2-2. Model path: Classification algorithm model file location
   2-3. Class file path
3. Camera name
4. Run
   4-1. Condition setting: Repeat
   4-2. Contents
   4-2-1. Load image from camera
   4-2-2. Image classification through 'Classification' model (2-1)
5. Result
   5-1. Recognize Traffic signal color
   5-1-1. At Red, Stop
   5-1-2. At Green, Drive

◎ Object detection (Traffic sign Red/Green)



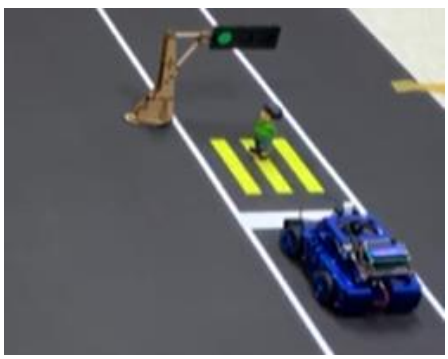
[Edit Block Coding]

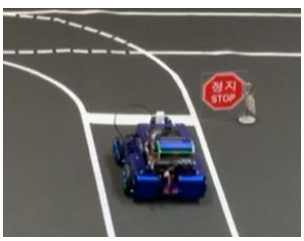
[Python code written]

◎ How to implement

1. Create Camera category block
2. Load 'Object detection' model
   2-1. Model name: Object detection algorithm model name
   2-2. Model path: Object detection algorithm model file location
   2-3. Class file path
3. Camera name
4. . Run
   4-1. Condition setting: Repeat
   4-2. Contents
   4-2-1. Load image from camera
   4-2-2. Image classification through 'Classification' model (2-1)
   4-2-3. Get 50% or more results only
5. 결과
   5-1. Recognize Traffic signal Red color
   5-1-1. 50% or more red, Stop
   5-1-2. Less than 50% Red, Drive

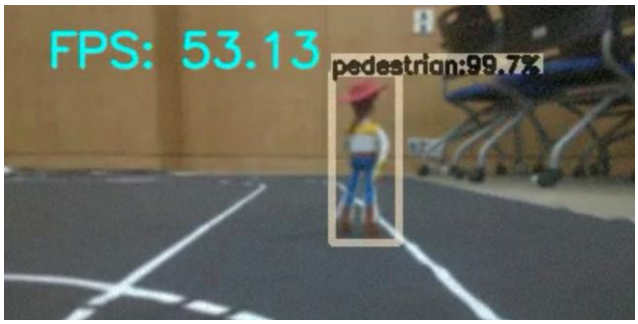
◎ Implement autonomous vehicle on driving track

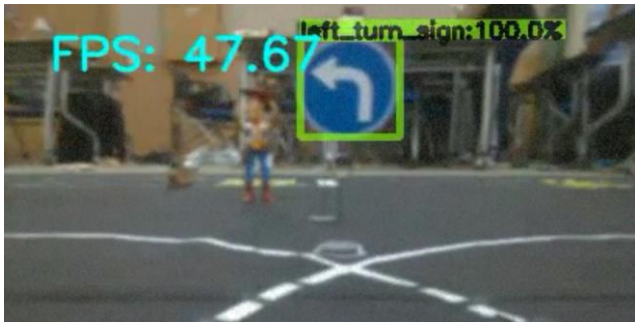




❖ **AI Algorithm implement using block coding software, Bready**

Object Detection through AI algorithm

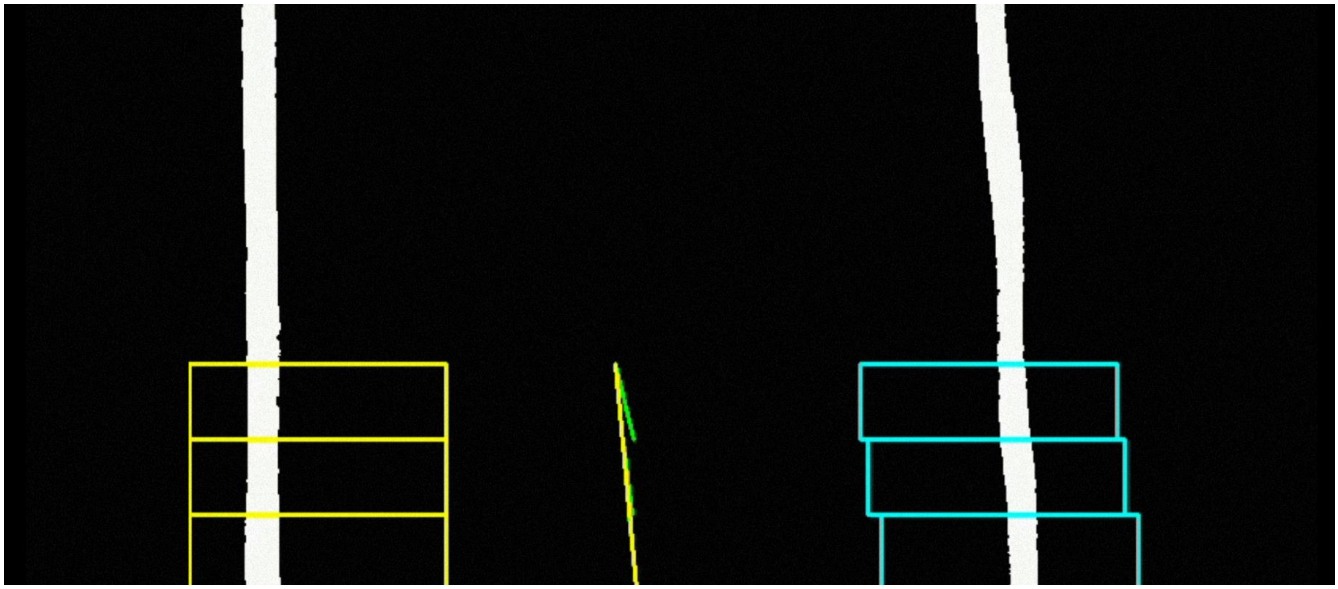




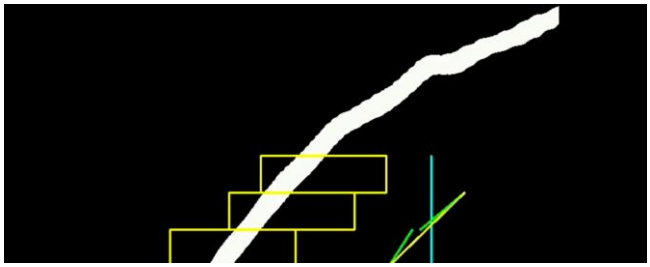
❖ **AI Algorithm implement using block coding software, Bready**

Lane Detection through AI algorithm

◎ **Straight Lane**



◎ **Curve Lane (Right/Left)**



◎ **Curve Cross Lane (Right/ Left)**

❖ **Curriculum**

Textbook

[Ⅰ. Vehicle control for autonomous driving]

1. Build Environment
2. Control front Lamp
3. Control Sound
4. Control LCD display
5. Monitoring Battery
6. Vehicle driving and speed control (Forward, Backward, Right/Left)
7. Remote monitoring and control (VNC or App)

[Ⅱ. AI classification and Deep learning for autonomous driving]

1. Build Environment
2. Traffic sign classification – Crosswalk, Stop
3. Traffic sign classification – Right/ Left turn
4. Traffic signal classification – Red/Green
5. Classification the object on the road (People, Cars, Animals)
6. Integration autonomous driving

[Ⅲ. AI object detection for autonomous driving]

1. Build Environment
2. Traffic sign object detection – Crosswalk, Stop
3. Traffic sign object detection – Right/ Left turn
4. Traffic signal object detection – Red/Green
5. Object detection on the road (People, Cars, Animals)
6. Integration autonomous driving

❖ **WOW-2030 AI Autonomous Vehicle Trainer (NVIDIA JETSON Xavier + Lidar)**

Figure