



**TURTLEBOT3**  
**AUTORACE**

**ROBOTIS**

Leon Ryuwoon Jung

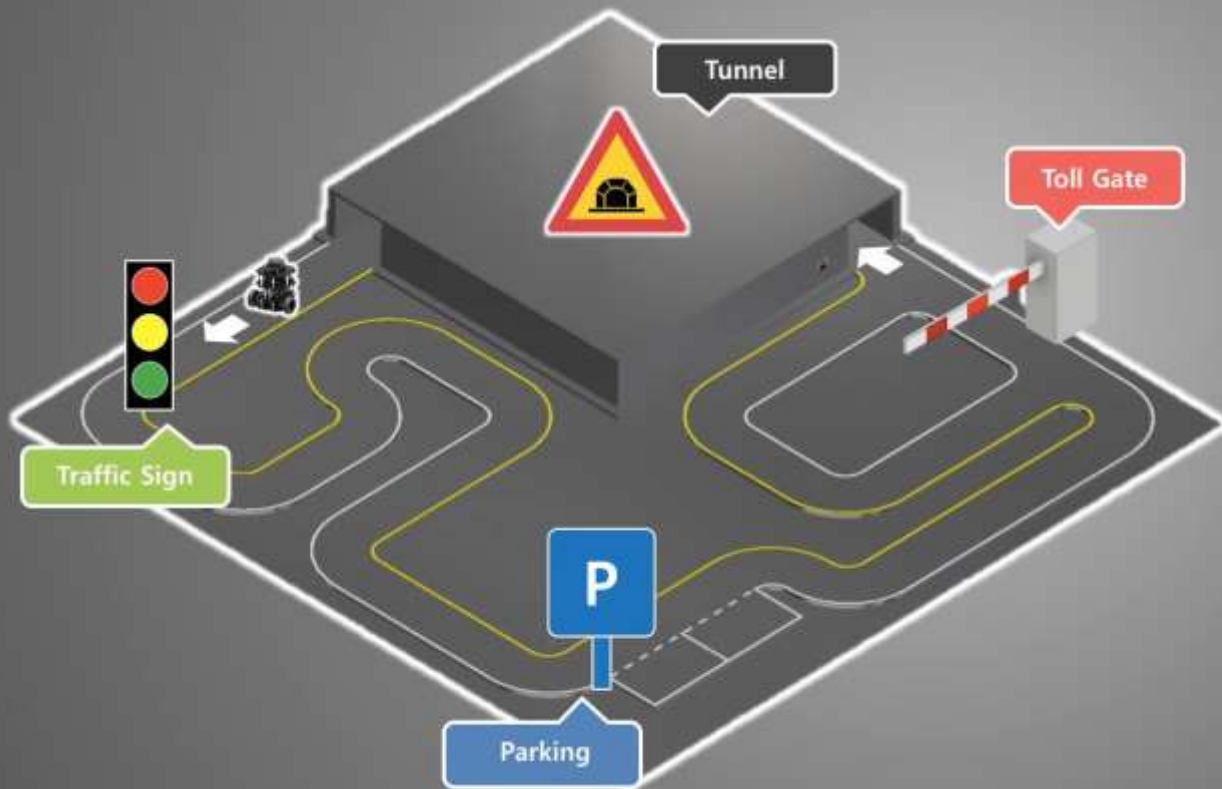
*Open Source Team  
Research engineer*

*[rwjung@robotis.com](mailto:rwjung@robotis.com)*



2017 R-BIZ Challenge

# TurtleBot3 AutoRace



*AI Research Starts Here*



Come and see how 15 selected teams work on SLAM navigation, computer vision processing and system integration to complete self-driving tasks.

- Date: Sep 15~16 13:00~17:00
- Venue: KINTEX, Korea

**ROBOTIS**

# Features

- Difficulty level : Korean
  - Traffic light
  - Traffic signs (fake signs included)
  - Toll gate bar and Parking lot
  - **Tunnel (No lights from outside)**
  
- Not just a line tracing game
  - 60% of Finishers – Tensor flow and other AI stuffs
  - Sensor fusion is needed
  - **All the thing in the game run by ROS (i.e. Referee system)**
  - Interesting ideas in S/W, H/W
  - **Teams from companies were participated (LG, Samsung,...)**
  - Before game: “**Why so easy**” / After game: **Cried**

# Robot

TurtleBot3  
Burger ↻



TurtleBot3 Wiki

[\(http://turtlebot3.robotis.com/en/latest/\)](http://turtlebot3.robotis.com/en/latest/)

Provided :



*HLS\_LFCD2*

& IMU  
Encoder

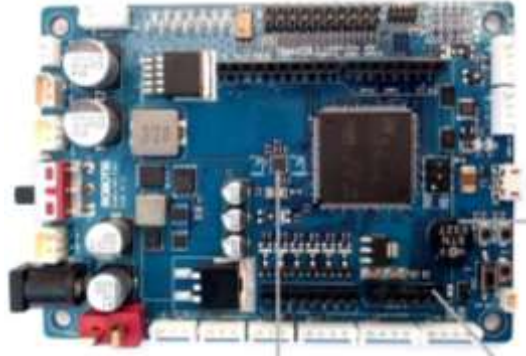
Additionally used :



# Customizing rule



+



+ What ever

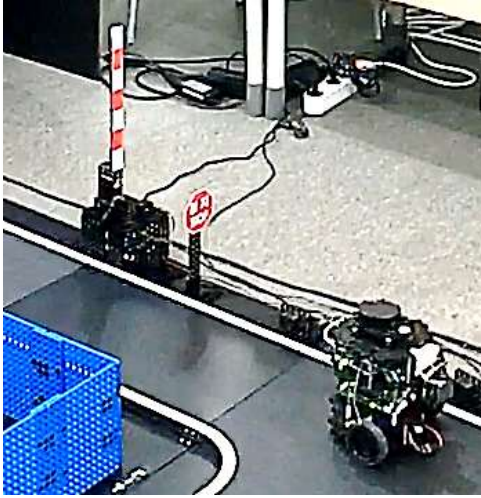
**Dynamixel**

**OpenCR**

**(Open-source Control module for ROS)**



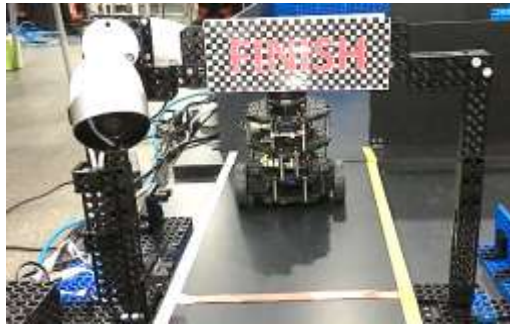
# ROSeD Referee system



Toll gate



Traffic light



Stopwatch

Uses



OpenCR



# RBIZ Challenge 2017

TurtleBot3 AutoRace 1<sup>st</sup> place winner video



# RBIZ Challenge 2017

TurtleBot3 AutoRace teaser





# Scheduling

- Goals
  - Education / Advanced application in **Real Vehicle**
  - Contributing to Open Source Community and studies of Autonomous driving field
    - **Source code should be opened (open level varies)**
    - **ROS** must be a perfect system for doing this
  - **Your opinions**
- From now
  - Preliminaries in **your countries (annual event)** –
    - Currently scheduling in **Germany / Japan**
  - World cup @ ROSCon2018 or IROS2018
  - **Be the Supporters**



**Videos are available @ [discourse.ros.org](https://discourse.ros.org)**

**Come and let's talk @ ROBOTIS booth**