

CAR ROBOTICS PLATFORM

「RoboCar™」 released

— For researching in the fields of Electric Cars, Advanced Safety Vehicles and Intelligent Transportation Systems —



RoboCar™ (without cover)



ZMP RoboCar™ Z (with cover)

June 9th, 2009, ZMP INC. (Tokyo, Bunkyo ward, CEO: Hisashi Taniguchi) started the sales of the world's first Car Robotics Platform equipped with robotic technology, **RoboCar™**. **RoboCar™** includes a built-in stereo camera and a cutting edge image recognition module, allowing high processing speeds never obtained before. With its various sensors, **RoboCar™** allows R&D on vehicles with autonomous motion, Advanced Safety Vehicles, Intelligent Transportation Systems or environment-friendly technologies. This is also a good study material for engineer training in schools and companies.

Shipment will start from the end of June; the price of the platform is USD 7000. The target sales volume for the first year is 200 units.

The image recognition module equipping **RoboCar™** is also available separately (for now in Japan only) for the price of JPY 399,000.

■ Background

In recent years, the demand for improved security and accident prevention functions in cars has increased dramatically. We are currently in a phase where robotization of cars is faster and faster and when discussing “next generation cars” we immediately think of them as “electric” and “intelligent”. The key to develop the cars of the future is thus “robotics”. To achieve this goal, software development is essential. And that is why a platform dedicated to R&D is necessary.

However, a full scale car platform is costly and requires a lot of space. For the moment, only car makers have the facilities required to experiment safely on real size car platforms. Research on intelligent cars for

example is thus difficult for universities or other companies.

Our challenge was to find a low cost solution, of small size, safe and easy to use for R&D or education purpose. The result is the world's first car robotics platform, **RoboCar™**.

■ Features

1. *Sophisticated environment recognition platform*

- **Various inputs from various sensors**
 - High speed stereo image recognition module
 - Gyro and acceleration sensors
 - Independent rotary encoders for the 4 wheels
 - Infrared distance sensors
 - Laser Range Finder (Option)

2. *1/10 Electric Car scale model*

- **Electric Vehicle system**
- **Coordination with MATLAB®/Simulink® control simulator (For practice on control of Electric Vehicles)**

3. *Implement user applications*

- **API (Application Platform Interface) provided**
- **Built-in OS (Linux with real-time patch) allowing autonomous motion of RoboCar™**

4. *Wireless communication through WiFi*

- **Communication with user applications on PC, enabling group control**
- **Communication between multiple RoboCar™**
- **Wireless remote control**

■ Use examples

- R&D on autonomous cars and robots.
- Engineer training in schools or companies
- R&D on Advanced Safety Vehicles
- R&D on energy preservation and environment friendly technologies (Li-Ion or fuel cell powered cars)
- R&D on wireless communications between vehicles
- Development of IT technologies for cars (information exchange services for example)
- Display of new technologies in car dealer shops or showrooms for example

■ Specifications

Product name / model number		RoboCar / ZMP RC-Z	
Dimensions / weight		429.0 x 195.0 x 212.2, 3kg (maximum load capacity: 1kg)	
System equipment	Stereo Camera	VGA CCD 30fps (x2)	
	Image processing module	ZMP made module (based on NEC IMAPCAR® parallel processor)	
	Main processor	CPU: AMD Geode® LX800 Processor 500MHz	
	Communication module	WiFi communication module IEEE802.11 b/g/n	
	Internal sensors	Gyroscope x1	
		Acceleration sensor x3	
		Rotary encoder (wheels x4, main motor axis x1)	
	Infrared sensors	Infrared distance sensors (x8)	
		Laser range finder *Option	
	Chassis, frame	Carbon FRP chassis, double wishbone type suspension, ZMP made aluminum frame	
	Motor driver	ZMP made module	
	Servo motor	Servo motor for robots	
	Main motor	DC motor	
Battery	Control system battery 1.2V AA NiMH batteries (x12)		
	Power battery 7.2V NiMH battery pack (x1)		
Scale model car embedded software	Main processor OS	Linux (Soft real time)	
	Control software	Control software, ZMP library, network software	
	Image processing module	Dedicated code	
PC Software	OS	Windows® / Linux	
	Development environment	gcc	

IMAPCAR is a registered trademark of NEC Electronics in Japan.

■ Price and selling procedure

Product name	Price
RoboCar™ (without cover)	USD 7,000
RoboCar™ Z (with cover) Color : Yellow / Red	Please contact us
Real time image processing module	Please contact us

Selling procedure :

Product can be bought directly from our company or through distributor s .

Enquiry: ZMP INC. TEL: 03-5802-6901 E-mail: info@zmp.co.jp

■ Next steps

- Based on the needs expressed by researchers we plan to continue on enhancing our platform.
- As we would like to have our RoboCar™ participate in the Tsukuba Challenge, we will adapt the platform: increased size (for example 1/8 scale) and specifications more suited for outdoor use.
- Sales promotion outside Japan.
- We plan to bring our product to full maturity so that it becomes the reference hardware simulator of cars of the future for engineers all over the world.

■ The designer

Kota Nezu, Vision Creator and President of znug design Inc., Tokyo Musashino.

Born in Tokyo, 1969. Graduated from Chiba University Faculty of Technology. During his time at Toyota, Mr. Nezu worked as concept development leader for the creation of the Toyota i-unit personal mobility vehicle. In 2005, Mr. Nezu moved from Toyota to establish his own company, znug design. Presently Mr. Nezu divides his time between designing automobile and industrial products as well as creating his own designs for the famed Milano Salone and other exhibitions. (www.znug.com)

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