BANGGUO YU

17923 Jingshi Road ⋄ China, Jinan

📞(+86)17854253735 ⋄ ✉yubangguosdu@gmail.com ⋄ 🏠http://yubangguo.com

🎓EDUCATION

ShanDong University)   *2018.9 - Now*
M.S. in Control Engineering

ShanDong University of Science and Technology   *2014.9 - 2018.6*
B.S. in Automation
The Captain in School Robot Team
The Top 6% in Comprehensive Performance
Exempt from Admission Exam to ShanDong University

★RESERCH INTERESTS

Robitics, Target-driven navigation, Control, SLAM, Reinforcement learning

📖EXPERIENCE

Target-driven Navigation   03/2020 - now
Reinforcement Learning   *Jinan, China*

· A bottomup construction framework is designed for structured 3D scene graph generation, which efficiently describes the objects, relations and attributes of the 3D indoor environment with structured representation.
· The optimal parse graph is calculated by the capture of semantic information and inference from scene priors.
· An improved probabilistic grammar model is used to represent the scene priors.
· The proposed framework significantly outperforms existing methods in terms of accuracy, and a demonstration is provided to verify the applicability in applying to high-level human-robot interaction tasks.

3D Structured Semantic Scene Graph   08/2019 - 01/2020
DMAI, Inc. Reserch Intern   *Guangzhou, China*

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The Design of Conrol board   05/2019 - 08/2019
Embedded Engineer   *Jinan, China*

· Design embedded control board hardware and shell
· Communication with server by CAN to control more than ten borads simultaneously

· Control strong electricity (220V AC) using weak current (5V DC)

Cloud-based Open loop SLAM

SLAM Algorithm Engineer

09/2018 - 04/2019

Jinan, China

· Based on Cartographer, we focus on how to build map in gallery with sparse features using 2D laser.
· Apriltag is used as the position-known landmark to build the constraint and add it to global optimization.
· The accumulated error is adjusted by the extra constraint in sparse feature gallery and the failure of building map is avoided.
· Websocket is used to achieve the cloud-based mapping, which the sensor data is captured by the mobile robot and calculation is run in the cloud server.

Competition Robot

Embedded System Engineer

10/2017 - 06/2018

Qingdao, China

· Construct and lead the team of robot in our college to finish the competition task that two robots should be designed to transmit the ball with a belt and throw the ball by the belt to target.
· Design the omnidirectional encoder wheel, and fuse IMU, ultrasonic sensor and laser to locate in the competition environment. More than one motors and pneumatic are used to transmit the ball between robots.
· The national first prize is got in Chinese University Robot Competition (ROBOCON), which is the best-known robotics contest in China.

PUBLICATIONS

A Bottom-up Framework for Construction of Structured Semantic 3D Scene Graph
Bangguo Yu, Chongyu Chen, Fengyu Zhou, Fang Wan, Wenmi Zhuang, and Yang Zhao
(**Submited**) IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2020

AWARDS

2018 AND 2019	2nd Prize	Shandong University Scholarship
2019.08	2nd Prize	The 14th China Graduate Electronics Design Contest
2018.06	1st Prize	The 17th China University Robot Competition (ROBOCON)
2018.06	1st Place	The 5th and 6th Shandong Provincial Robot Competition
2017.08	2nd Prize	National Undergraduate Electronocs Design Contest
2017.06	2nd Prize	Shandong Provincial Challenge Cup Technological Innovation Competition
2016.10	1st Place	The 5th Shandong Provincial University Robot Competition
2016.10	1st Place	The 2th Shandong SCM Application Design Competition
2016.08	2nd Prize	National Undergraduate Smart Car Contest

TECHNICAL SKILLS

Computer Languages	C/C++, python, Matlab, LaTeX
Robotics	ROS, PID Control, SLAM, Navigation, Reinforcement learning
Embedden System	STM32, K60, CAN, UART, IIC, SPI
Design	Altium Designer for hardware, SolidWorks for machinery