Personal Information

Chunran Zheng

Sex：	Male	DoB：	Feb.10, 1998
Birth Place：	Heilongjiang, China	Github：	xuankuzcr

Education

Sept. 2016-July 2020 Xi'an Jiaotong University Major: Automation

GPA：84 (IELTS: 7.0)

Professional Skills

Software：

- C / C++ / Python / HTML / CSS / JavaScript / Matlab / Labview
- Linux operation system
- CMake, Git and Shell
- ROS operating system and programming environment setup, serial communication between the upper computer and embedded system.
- Library: OpenCV, Tensorflow, Eigen, Sophus, ceres, g2o and PCL library.
- Open source: common target detection algorithms (SSD, YOLOv3 etc.), Cartographer, Gmapping, ORB-SLAM, and ROS two-dimensional navigation function package.

Hardware：

- Embedded development(STM32, STC89C52, Arduino2560, Tiva series)

Honors and Awards

- **Runner-up** in the WRCF (world robot competition final) intelligent housekeeper AI challenge—object searching in 2019 (as team leader)
- **National first prize** in the WRCF (world robot competition final) youth robot design competition in 2019
- **National second prize** in national college students' biomedical engineering innovation design competition (rehabilitation auxiliary group) in 2019
- **National second prize** in the supermarket shopping robot project in 2019—China robot competition
- **National second prize** in the multi-person identification robot project in 2019—China robot competition
- **National third prize** in the ROBOCUP (standard platform group) in 2019
- **First prize** of the 2017 national mathematical contest for college students in Shaanxi
- **First prize** of Xi'an Jiaotong University mathematical modeling competition in 2018 (as team leader)
- **First prize** of vex robot championship of Xi'an Jiaotong University in 2018 (as team leader)
- **Second prize** in the national electronic design competition for college students in Shaanxi competition area (as team leader)
- Algorithm OJ ranked **3rd** in AI practice competition (OCR recognition) jointly held by Xi'an Jiaotong University and Baidu in 2018
- Best creative thinking award in the WRCF (world robot competition final) in the 2019 youth robot design competition
- 2016-2017 Siyuan **Scholarship**
- 2017-2018 Siyuan **Scholarship**

Research Experience

- Scientific research training in Xi'an Jiaotong University Bionic Engineering and Biomechanics Institute (**BEBC**), mainly responsible for the development of circuit board and control program of intelligent wearable devices (2017-2018)
- Participate in the X plan in Xi'an Jiaotong University Institute of Artificial Intelligence and Robotics(**IAIR**), mainly responsible for voice interaction and natural language processing with unmanned vehicles in the project of unmanned driving and intelligent auxiliary safety system (2018-2019)

Papers and Patents

- Yingchun Li, **Chunran Zheng**, Tianshu Fang, Fei Li*, A strain sensor based on a stretchable CNTs/PDMS fiber, The 2th International Conference on Flexible Electronics, July13-14, Hangzhou, China, 2019
- Yingchun Li, **Chunran Zheng**, Tianshu Fang, Shuai Liu, Liang Huang, Feng Xu, Fei Li*,A smart glove based on tunable MWNTs/PDMS fibers for gesture and temperature recognition. Advanced Functional Materials, manuscript number: 202000448
- **Chunran Zheng**, Yuhao Wei, Hui Huang, Ruixin Li. The utility model relates to laser automatic electrical measuring equipment. Patent Application No. : 2019205833221, China, April 2019
- Fei Li, Yingchun Li, **Chunran Zheng**, Feng Xu. A standardized sign language simulation of smart gloves. Patent Application No. : 2019108206414, China, August 2019

Project Experience

- **Differential Wheeled Service Robot Based on ROS Operating System**
  Project Leader
  Project Source：WRCF AI Challenge
  Project Brief： The robot is designed to enter a completely unknown playing field, to draw a map of the field, to identify and calibrate objects in the room, and to determine the room types
  Major tasks:
  1) Chassis driver programming;
  2) Kinect, RPLIDAR-A2 driver configuration and up and down machine communication;
  3) Robot system framework building based on ROS

- **Full-Automatic Robot Shooting Combat**
  Responsible for mapping and navigation
  Project source: AI challenge co-sponsored by Robomaster and ICRA
  Project brief: In the field full of functional organs, the contestant teams are required to use the official robot platform to make motion planning according to the situation on the field by perceiving the environment information of the battlefield, and the fully autonomous robots shoot off enemy robots by firing at them
  Main tasks:
  1) Replacing the traditional Gmapping scheme with the Cartographer based scheme;
  2) Robot positioning and navigation based on amcl and move_base;
  3) Using PNP to calculate the relative pose between the target and the camera

- **Football Match Based on NAO Robot**
  Strategy Group Leader
  Project source: ROBOCUP China soccer robot-standard platform group
  Project description: In the NAO robot 5v5 football match, the team is required to provide cooperation and attack plan in the match

Main tasks:

1) Programming the finite state machine for finding the ball, turning to the ball, walking to the ball, kicking and passing in different game states;
2) Designing decision trees that can solve different field situations;
3) Carrying out inter-team communication and design multi-machine coordination strategies

- **Object Recognition and Location Calculation Based on Realsense Depth Camera**
  Project Leader
  Project source: China robot competition—supermarket service robot
  Project brief: the ROI region of the object to be grabbed was identified by YOLOv3 target detection algorithm, and the relative coordinates of the object to be grabbed were obtained by depth information of the depth camera, so as to be grabbed by the service robot.
  Main tasks:
  1) Classifying target objects with YOLOv3, Faster R –CNN training;
  2) Processing the depth information of the depth camera and calculate the average depth of the distance object with the PCL point cloud library;
  3) Locating the object's relative coordinates through coordinate transformation, which are transmitted to the mechanical arm through serial communication

- **Blind Massage Examination Evaluation Algorithm Based on Trajectory Graph and Lenet5**
  Project Leader
  Project source: School of Mechanical Engineering, Xi'an Jiaotong University
  Project Brief: A visual solution is proposed for a situation that the kneading method and the rubbing method are indistinguishable from embedded devices, based on a device for evaluating the massage of blind people
  Main tasks:
  1) Recognizing fingernails and joints based on LeNet5 convolutional neural network;
  2) Drawing the Bessel curve for the movement trajectory of knuckles and joints;
  3) Classifying the obtained trajectory graph based on SVM so as to obtain the weighting of manipulation score

Internships

- **DTmobile July 10 – August 28, 2017**
  1） Unmanned action plan based on Internet of vehicles
  2） Multi-sensor calibration and data fusion, LiDAR point cloud data preprocessing, and algorithm design of traffic lights and zebra crossing detection based on deep learning
- **PETROCHINA Daqing Petrochemical Company July 16 –August 31, 2018**
  1) Receiving trainings of the electronic information center
  2) Face recognition security system development based on python
  3) Classifying the running state of the field equipment through Bayes, artificial neural network, KNN and SCM machine learning algorithm

Works Show Links

- **EEG Assisted Robot based on SSVEP**
  https://v.youku.com/v_show/id_XNDU5OTI0NjQ2NA==.html
- **Sign Language Interpreting Gloves Demo**
  https://v.youku.com/v_show/id_XNDU5OTIzNzcwNA==.html
- **Object Mobile Robot based on SLAM and Voice Control**
  https://v.youku.com/v_show/id_XNDU5OTIxNTUzNg==.html

- **Myoelectric Control Service Robot based on ROS**
  https://v.youku.com/v_show/id_XNDU5OTIxMDg1Mg==.html
- **Intelligent Agriculture**
  https://v.youku.com/v_show/id_XNDU5OTE3MjU4NA==.html
- **Multi-Person Identification Robot**
  https://v.youku.com/v_show/id_XNDU5OTE1NjM2NA==.html
- **Semi-Dense 3d Reconstruction Robot**
  https://v.youku.com/v_show/id_XNDYxNTEyNjM3Ng==.html
- **Yolo_Darknet recognition(frame rate 45 Robomaster)**
  https://v.youku.com/v_show/id_XNDYxNTEyNjM3Ng==.html
- **Auto Target Enemy Robot Tank Demo**
  https://v.youku.com/v_show/id_XNDYxNTEzMjQ1Mg==.html
- **Handwritten Digital Tube Buff Recognition**
  https://v.youku.com/v_show/id_XNDYxNTEzMjIyOA==.html
- **Windmill Mechanism Buff Recognition**
  https://v.youku.com/v_show/id_XNDYxNTEzMTg4MA==.html

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