ZEJIN WANG

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https://github.com/dunkegg/wangzejin.git

EDUCATION

University of Bristol **Bristol, United Kingdom**
Master of Science in Robotics 09/2019-12/2020
➢ Merit Classification

Zhejiang University **Hangzhou, China**
Bachelor of Engineering in Mechanical Engineering 09/2015-07/2019
➢ Cumulative GPA: 3.76/4.0
➢ Excellent Student Scholarship (Top 20%), thrice 2016-2018

PROFESSIONAL EXPERIENCE

Cowa Robot (Chinese Leading Autonomous Driving Solutions Provider with A Focus on Urban Sanitation) **Shanghai, China**
Algorithm Engineer, The R&D Department 02/2022- Present
➢ Responsible for developing decision-making and planning algorithms for an autonomous driving sidewalk cleaning robot
➢ Established a prediction system with the judgment criteria according to the features of the obstacles both on the sidewalk and at the intersection to predict the robot's driving path
➢ Created an obstacles avoidance system with a rule-based planner for normal cases and a learning-based planner for corner cases
➢ Applied MLP to extract environment features and PPO to train the agents
➢ Utilized curriculum learning with Hybrid A* to improve model training speed and accuracy
➢ Managed to launch and adapt the robot with prediction and obstacles avoidance system in a 2km-long sidewalk route in Shanghai

JAKA (Chinese Leading Collaborative Robotic Arms Company and Intelligent Solutions Provider) **Shanghai, China**
Algorithm Engineer, The R&D Department 05/2021-01/2022
➢ Designed an adaptive algorithm to be applied to the collision detection of collaborative robots based on force sensors and inverse dynamics of the manipulator
➢ Helped lower the collision force detection threshold by 50% and reduce the frequency of false alarm collisions to 0
➢ Designed and developed the overall functions of a massage platform based on a composite robot (robotic arm & automated vehicle), which was displayed at the China International Industrial Fair

RESEARCH ACTIVITY

Modeling of Capture Decision by POMDP **Bristol, United Kingdom**
Dissertation Project, Supervisor: Mehdi Sobhani 05/2020-10/2020
➢ Developed a human-computer interaction game and built a model for a robot arm which can observe the movement of color blocks and human hands to complete the game
➢ Processed coordinate information of hundred groups of hands and color blocks to remove the error noise
➢ Transformed the coordinate information into trajectory information as the basis for judging human actions
➢ Extracted a series of features required in the POMDP method from trajectory information and set the values of transformation and reward functions to verify the success rate of human-computer cooperation
➢ Defined 16 observation states, 16 actual states, and 8 actions including their transformation and reward functions, and built a mathematical model with MATLAB
➢ Built a decision model to respond to the observed information with a game success rate of 90%

Structure Design of Humanoid Robot's Shoulder and Neck **Hangzhou, China**
Dissertation Project, Supervisor: Jituo Li 12/2018-06/2019
➢ Built a shoulder and neck hardware platform of a humanoid robot as a mannequin to try on clothes for consumers
➢ Replaced the drivers' electric motor with the pneumatic structure to double the number of drivers and increase the efficiency
➢ Designed flexible surface structures and connection modes and performed control programming with Arduino

Cutting Tool Wear Detection **Hangzhou, China**
Individual Project (Students Research Training Program) 12/2016- 06/2017
➢ Developed a system to extract features (e.g. the shape of the blade and notches) from images with a computer vision method, which enabled the machine to automatically replace the cutting tool and achieve unmanned operation
➢ Achieved a detection accuracy greater than 90%

ADDITIONAL INFORMATION

Programming Languages: C++ (experienced), Python (familiar)
Framework: MATLAB (experienced), Pytorch (familiar), ROS (familiar)
Software: Solidworks, CAD
Languages: Chinese (native), English (proficient)