

Changjin Wang

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Education & Work Background

2017.9-2020.6: Master degree/**Beijing Institute of Technology**/Bio-robotics. rank: 4/30 GPA: 3.7/4

2017.1-2017.6: Visiting student / **The University of Auckland**/ School of Engineering

2013.9-2017.6: Bachelor degree / **Beijing Institute of Technology**/ Mechatronics Engineering
rank: 13/62 GPA: 3.5/4

2020.7-now: Robot algorithm engineer/ **Huawei Technology, Ltd.** (A/B+/A, TOP 15%)

Skills

C++, Python, MATLAB, good at floating-based kinematics & dynamics, trajectory planning, nonlinear model predictive control (NMPC), motor field-oriented control (FOC)

Publications

- **An Integrated Two-Pose Calibration Method for Estimating Head-eye Parameters of a Robotic Bionic Eye** .IEEE Transactions on Instrumentation and Measurement (2019.4.28, Second Author, My Supervisor is First one)
- **The Design and Development of an Anthropomorphic Worm-Gear Driven Robotic Hand : BIT-JOCKO**. IEEE International Conference on Advanced Robotics and Mechatronics (2019.4.26, First Author, Best paper Nominate)

Reasearch Experience

(2020.7-now) Huawei Technology, Robot control Algorithm Engineer(publish-limited)

P1: Research on Hybrid robot consisting of 18-DOF legged robot + robotic arm:

Developed an algorithmic framework for the legged robot using acados's nonlinear solver. To achieved 18-DOF full-body Jacobian non-space control and whole-body floating-based kinematics and dynamics for balance while crossing obstacles.

P2: Unified implementation of Point-mass model for 4WIS robot with optimal control

Designed a continuous optimization algorithm approach to unify the four-wheel steering modes. developed a controller that automatically decomposes commands into a point-mass model for optimal energy consumption.

P3: Low-cost, low-inertia, low-mass compliant force-controlled robotic arm

Designed a lightweight and low-inertia robotic arm with a PIEPPER configuration and Implemented kinematics, dynamics, trajectory planning, and motion interpolation. Developed a real-time high-performance lightweight robot library for precise and smooth control.

(2017.7-2020.9), Beijing Institute of Technology (Master's period)

P1: Developed a bionic-eye attitude stabilization algorithm based on gravity compensation

This project focuses on biomimetic eye robots and introduces a stabilization algorithm using gravity compensation and attitude disturbance observation. Achieving disturbance rejection of 5Hz and above, it maintains end-effector stability within 0.5° .

P2: Explored online bionic eye external parameter calibration algorithm

For biomimetic eye robots, a method is proposed for real-time computation of binocular external parameters during motion, enhancing accuracy in locating points and recovering depth information. This approach increases the field of view for moving cameras compared to fixed ones.

P3: Proposed an active 3D exploration and reconstruction algorithm for robotic bionic-eye based on eye-foot coordination algorithm

Utilizing biomimetic eyes for Active SLAM, the algorithm integrates Octomap's projection maps and Gmapping's contour maps to identify visual reconstruction voids. Employing ray projection and Best View concepts, the robot achieves efficient 3D reconstruction and 2D map construction in unfamiliar environments with full autonomy

Honors and Awards

National Scholarship

National Motivational Scholarship

Tang Nanjun Scholarship SMC Scholarship

First-class Academic Scholarship for Graduate Students

First Prize in the National College Student "Challenge Cup" Competition

First Prize in the National Aerospace Model Competition

Second Prize in the National College Student Energy Saving and Emission Reduction Competition

Top Ten Projects in the National College Student Innovation and Entrepreneurship Annual Meeting

Two Huawei Annual A Award (Top 15%), One Huawei Annual B+ Award