Wang Li

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EDUCATION

Beijing Jiaotong University *Sep 2014 - Jul 2018*

Bachelor Measurement and Control Technology and Instrumentation *Beijing*

- GPA: 4.37 / 5.0 (Top 4%)
- Honors/Awards: National Scholarship, Excel Graduate Student Award

Beihang University *Sep 2017 - Mar 2020*

Master Control Science and Engineering *Beijing*

- GPA: 86.14 / 100
- Honors/Awards: Freshmen Scholarship, First Class Scholarship

RESEARCH EXPERIENCE

Cable-Driven Upper-Extremity Exoskeleton Rehabilitation Robot *Jun 2018 - Present*

- The research was supported by National Natural Science Foundation of China, aiming at rehabilitating stroke patients by using cable-driven exoskeleton.
- A 4-DOF cable-driven arm rehabilitation robot(CARR-4) and its controller were proposed, the exoskeleton consists of a 3-DOF shoulder module and a 1-DOF elbow module, and each of them can be controlled independently.
- The forward kinematics of the 4-DOF exoskeleton robot was derived based on Denavit-Hartenberg(DH) convention, and dynamics model was derived from Lagrange-Euler formulation, a PD feedback combined with inverse dynamic feedforward control algorithm applied in trajectory control. To verify the effectiveness of CARR-4, corresponding hardware system was designed and trajectories tracking ability was demonstrated on healthy people.

China University Robot Competition(ROBOCON) *Jun 2016 - Jun 2017*

- Two robots were designed, one robot is powered by electricity called robot A, and another robot B without power and driven by robot A, robot A and robot B need to cooperate to finish a series of tasks in the given time.
- We utilized electrical fan installed on robot A to drive robot B, and developed an algorithm to adjust the wind force based on the distance between the two robots measured by laser and ultrasonic sensors. Infrared sensor was applied on autonomic mobile robot A to make it move along the scheduled trajectory, infrared sensors were also mounted on robot B to detect and follow the black line on the track.

Freescale Cup Intelligent Car Competition *Mar 2016 - Jul 2016*

- Using the car model suite designated by Freescale Semiconductor and Microcontroller from Freescale Semiconductor as core control unit, carrying out car production and commissioning, place in the competition is determined based on time taken by racing car to finish the racing on the designated racing track.
- Eight electromagnetic sensors were mounted in front of the race car to sense the guiding metal strips, by using the amplitude demodulation in circuit, the car can detect its deviation from the guiding strips. The control scheme and racing car system were designed, including sensor signal collection and processing, drive motor, rudder control and control algorithm software development.

Paper

- "Motion Control of a 4-DOF Cable-Driven Upper Limb Exoskeleton", *14th IEEE Conference on Industrial Electronics and Applications(ICIEA 2019)*