



# Yize Wang

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## EDUCATION

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**Swiss Federal Institute of Technology in Zurich (ETH)**, Zurich, Switzerland      Sep 2018 – May 2021 (Expected)  
Master of Science in Mechanical Engineering | GPA: 5.7/6.0

**Shanghai Jiao Tong University (SJTU)**, Shanghai, China      Sep 2014 – Jun 2018  
Bachelor of Engineering in Mechanical Engineering (Degree with Distinction) | GPA: 90/100 (Rank: 1/28)

## SKILLS

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**Programming:** C++, Python, MATLAB

**Technology:** Linux, ROS, Git, Docker, CMake, LaTeX, SolidWorks

**Knowledge:** path planning, state estimation, model predictive control, game theory, reinforcement learning

## INTERNSHIP

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**Intersection Path Planning for HD Map**      Jun 2020 – Sep 2020  
Algorithm Intern | Intelligent Automotive Solution Department, Huawei, Shanghai

- Computed curvature-wise-optimal constraint-compliant paths based on the third order Bezier curve
- Identified lane groups and planned parallel collision-free paths
- Designed graph-search-based algorithm to find the optimal path that satisfies complex constraints
- Planned 9625 intersection paths in Shanghai, with 99% meet standards and the left 1% accurately forewarned of

## RESEARCH

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**Path Planning for Constrained Stochastic Systems Based on Path Integral Algorithm**      Jun 2019 – Sep 2019  
Robotic Systems Lab, ETH | Advisor: Jan Carius, Dr. Farbod Farshidian, and Prof. Marco Hutter

- Formulated the minimization problem of the cost function expectation as a nonlinear stochastic HJB equation
- Implemented path integral algorithm for state-input-equality-constrained systems based on Lagrangian method and for state-input-inequality-constrained systems based on constraint-compliant sampling methods
- Acquired optimal control sequences for the robot to circumvent obstacles robustly while respecting constraints

**3D Reconstruction from Depth Maps with Microsoft HoloLens**      Mar 2019 – Jun 2019  
Computer Vision and Geometry Group, ETH & Microsoft | Advisor: Dr. Silvano Galliani, Prof. Marc Pollefeys

- Constructed consistent and compact point clouds based on visibility check and surface normal check
- Applied statistical outlier removal filter to suppress noise and applied voxel grid filter to simplify point clouds

**Self-Collision Avoidance Algorithm for InMoov Robot**      Oct 2017 – Jun 2018  
Institute of Mechatronics & Logistics Equipment, SJTU | Advisor: Prof. Liang Gong

- Acquired human body angles from the motion capture suit and computed corresponding robot body angles
- Simplified robot joints with spheres, and robot links with capsules, and derived forward kinematics
- Realized self-collision detection and avoidance based on spatial geometric algorithms

## PUBLICATIONS

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- [1] **Wang, Y.**, Kong, L., Yang, H., Li, J., Xia, P., Gong, L., & Liu, C. (2019). Building Unmanned Plant Factory with Modular Robotic Manipulation and Logistics Systems. *Recent Developments in Intelligent Computing, Communication and Devices*, 11-19.
- [2] Li, Z., **Wang, Y.**, Xue, X., McCracken, B., Ward, K., & Fu, J. (2018). Carbon Nanotube Strain Sensor Based Hemoretractometer for Blood Coagulation Testing. *ACS Sensors*, 3(3), 670-676.
- [3] Li, Z., Xue, X., Lin, F., **Wang, Y.**, Ward, K., & Fu, J. (2017). Capillary Assisted Deposition of Carbon Nanotube Film for Strain Sensing. *Applied Physics Letters*, 111(17), 173105.

## PATENTS

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- [1] **Wang, Y.**, Yang, H., Wang, W., Dai, S., Gong, L., Liu, C., Zhou, B., Ma Z., Mao Y. & Zhang D., “An Intelligent Platform for Agricultural Robots Based on Motion Decomposition”, Patent Number: ZL 2016 2 0928634.8
- [2] **Wang, Y.**, Yang, H., Wang, W., Dai, S., Gong, L., Liu, C., Zhou, B., Ma Z. & Zhang, D., “A Multifunctional Instrument for Seed and Panicle Phenotyping Based on Android System”, Patent Number: ZL 2016 2 0259293.X

## HONORS & AWARDS

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China National Study Abroad Scholarship	2018
Outstanding Graduate of Shanghai	2018
Tang Lixin Scholarship ( <b>Ranked 1 out of 441</b> )	2017
SJTU “Person of the Year in Sci-Tech Innovation”	2017
China National Scholarship ( <b>Ranked 3 out of 468</b> )	2016