YUNHAI HAN

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EDUCATION BACKGROUND

University of California, San Diego (UCSD) 09/2019 - present
M.S. in Dynamics & Controls, Mechanical and Aerosapce Engineering *GPA: 3.909/4.00*

· **Relevant Courses:** Robotics

Yanshan University 09/2015 - 07/2019
B.S. in Mechatronics, Mechanical Engineering *GPA: 3.792/4.0, Ranking: 2^{nd} of 594*

· **Relevant Courses:** Mechatronics

FILED OF INTERESTS

Robotics Perception and Automation; Robotics Control; State Estimation;

RESEARCH PROJECTS

Auto-calibration Method for Urban Autonomous Driving Applications
- Present a system for dynamic camera calibration based on recognition of stop signs
- Camera intrinsic parameters are tracked over time and converges to stable values within a short time
- Experimental results show improved performance for the auto-calibration
- Submitted a paper to **IEEE RA-L with ICRA** as first-author

Surgical Simulation Framework for Tool-Tissue Interaction
- Propose the framework that continuously tracks the motion of manipulator and simulates the tissue deformation
- Compute the deformation energy for the control and planning task using implicit Euler energy
- Published a paper at **IROS Workshop (Cognitive Robotic Surgery)** as first author and gave a spotlight presentation

***Real-to-Sim* Registration of Deformable Soft Tissue with Position-Based Dynamics**
- Propose an online, continuous, registration method to bridge from 3D visual perception to position-based dynamics modeling of tissues
- Account for differences between the simulation and the real, live surgical scenes.

Numerical verification of the differential privacy for a novel moving-horizon estimator
- Design a differential privacy test framework for distributional systems using numerical verification method
- Capable of easily extending to other estimators for the verification of the claimed differential privacy

PUBLICATIONS

- Han. Y, Liu. Y, Paz. D, and Christensen. I. H, "Auto-calibration Method Using Stop Signs for Urban Autonomous Driving Applications", arXiv:2010.07441
- Han. Y, Liu. F and M. C. YIP, "A 2D Surgical Simulation Framework for Tool-Tissue Interaction", arXiv:2010.13936

AWARDS & HONORS

AWARDS

- *06/2016* China Undergraduate Mathematical Contest in Modelling (CUMCM) *Second Prize*
- *03/2017* Zhou Peiyuan Mechanics Competition *National Excellence Award*
- *05/2017* National Electronic Design Competition *Successful Entry Certificate*
- *09/2017* Asia-Pacific Mathematical contest in modeling (APMCM) *Second Prize*
- *01/2018* Mathematical Contest in Modeling (MCM/ICM) *Honorable Mention*
- *08/2018* RM RoboMasters *Second Prize*

HONORS

- *11/2017* National Scholarship from Chinese Ministry of Education
- *07/2018* Certificate for Attendance of CDIO 2018 Academy (Japan)
- *06/2019* Certificate of Excellent Graduate in Hebei Province

STANDARD TESTS

03/2018 - 03/2020 TOEFL Score 101 (101, R30, W26, L23, S22)
09/2018 - 09/2023 GRE Score 325 (V156, Q169, W3.5)

COMPUTER SKILLS

Programming Language C/C++, Python, MATLAB/Simulink, LaTeX
Embedded Development STM32