

CURRICULUM VITAE

Dongting Li

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BRIEF BIOGRAPHY

Dongting Li received the M.Eng. degree of Control Engineering from Harbin Institute of Technology (Shenzhen) in Jan. 2021. Since Mar. 2021, he joined Prof. Guangfu Ma's laboratory and started pursuing his Ph.D. degree in Control Science and Engineering, Harbin Institute of Technology. His current research interests include **multi-agent game theory, model predictive control, learning-based control and their applications on aerospace engineering**. He is a reviewer of some journals focusing on control theory, e.g., ISA Transactions, Aerospace Science and Technology, Advanced Control for Applications, etc. He is a student member of IEEE.

EDUCATION

Harbin Institute of Technology (C9, 985, 211) -*Ph.D. Candidate of Control Science and Engineering*

- Thesis: Decision-making and Control for Multi-agent Pursuit-Evasion Games
- Supervisor: Prof. Yanning Guo

Harbin Institute of Technology, Shenzhen (C9, 985, 211) -*Master of Control Engineering*

- Thesis: Visual Pose Estimation and Model Predictive Control for Rendezvous and Docking with a Non-cooperative Target
- Supervisor: Prof. Ai-Guo Wu (National Outstanding Young Scholars)

Northeast Petroleum University -*Bachelor of Electrical Engineering and Automation*

PUBLICATIONS

(* represents the corresponding author)

D. Li*, R. Dong, Y. Guo, Sampling-based 3-D Line-of-Sight PWA Model Predictive Control for Autonomous Rendezvous and Docking with a Tumbling Target, ISA Transactions. (SCI, Q1, IF: 5.911, under the final revision)

- A method is presented to improve PWA MPC, considering the model deviation caused by the accumulated prediction error.
- A novel LOS-Euler rendezvous and docking framework is proposed.
- A singularity-free strategy is provided to cross the singularities of Euler states.

D. Li, Y. Guo*, et al, Multiple spacecraft Pursuit-Evasion Games: Formulation and ϵ Slightly Altruistic Equilibria Solution, IEEE Trans. Aerospace and Electronic Systems. (Under submission)

- An ϵ altruistic equilibria is proposed to achieve distributed global solution, considering the cooperation between the teammates and competition between the opponents.
- A two-layer topology containing the communication and game information is presented, a prescribed performance function is adopted to adjust the weights in the game topology.
- Consider the constraint of the input, an actor-critic method is adopted to solve the HJI equations.

Y. Gao, D. Li*, **D. Li**, et al, Command Filter-based Finite-time Tracking Control for Euler-Lagrange System via Adding a Power Integrator Technique, IEEE Trans. Circuits and Systems I: Regular Paper. (Under Review)

D. Li, A. Wu*, P. Li, Nonlinear Model Predictive Control for Spacecraft Attitude Tracking with Kalman Filter, Chinese Automation Congress (CAC), 2020:3389-3394. (EI)

PROJECTS

Secure approach and takeover game control of noncooperative targets (Ph.D. stage, Ongoing)
(National Natural Science Foundation of China, 600 thousand RMB/80 thousand EUR)

- This project studies the secure approach and takeover game between a service agent and a noncooperative target, including the 6-DOF (position and attitude) game.

Mission planning and game control for multi-agent games (Ph.D. stage, Ongoing)
(300 thousand RMB/40 thousand EUR)

- This project studies the multi-agent game. Firstly, a mission planning approach is proposed to realize task assignment, considering the long-distance maneuver. Furthermore, considering the autonomy of each agent, a decision-making and control scheme is carried out to realize near field game.

Active compensation-based control for planetary landing (Ph.D. stage, Ongoing)
(10 million RMB/1.4 million EUR)

- Similar with the black nine minutes in Mars landing, this project studies the navigation, guidance and control methods for high-precision planetary landing, considering all disturbance and uncertainty in planetary exploration.

Pose estimation and control for sampling return from the surface of Mars (Master stage, Completed)
(300 thousand RMB/40 thousand EUR)

- This project studies the sampling return from Mars. After the sampling probe ascends into the orbit of Mars, the autonomous rendezvous with the orbiter is completed in this mission. This project mainly studies the design of visual pose estimation, rendezvous and docking control between the ascender and the orbiter.

Analysis and design of control system based on matrix equation (Master stage, Ongoing)
(National Natural Science Foundation Outstanding Youth Science Funds, 1.6 million RMB/220 thousand EUR)

- This subject studies the analysis and design of control systems based on matrix equations, and applies the proposed method to spacecraft attitude control.

HONORS & REWARDS

- Outstanding Graduation of HIT, 2020
- Excellent Master's Thesis of HIT, 2020
- The first-class Scholarship for Postgraduate, HIT, 2018
- The first-class Scholarship for Postgraduate, HIT, 2019

SKILLS

- Software: Matlab & Simulink, Visual Studio, ROS, Linux, LaTeX, etc.
- English: CET-6 (College English Test Band Six)