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RESEARCH INTERESTS	Guidance, navigation & control; Optimization; Cooperative guidance; Aircraft control; Sensor fusion; Aircraft simulation; Reinforcement learning	
EXPERIENCE	Department of Precision Instrument, Tsinghua University, Beijing, China	
	Assitant Research Fellow	Jan 2023 to Present
	Postdoctoral Research Fellow	Jul 2020 to Dec 2022
	Technion - Israel Institute of Technology , Haifa, Israel	
	Visiting Scholar	Oct 2018 to Apr 2019
	<ul style="list-style-type: none">• Advisor: Prof. Tal Shima, dean of the Department of Aerospace Engineering• Cooperative Autonomous Systems Laboratory	
EDUCATION	Department of Computer Science & Technology, Tsinghua University , Beijing, China	
	Ph.D., Computer Science & Technology	Sep 2015 to Jun 2020
	<ul style="list-style-type: none">• Thesis: Cooperative guidance on aircraft terminal active protection• Advisor: Prof. Jihong Zhu• State Key Laboratory of Intelligent Technology and Systems	
	Beihang University (former Beijing University of Aeronautics and Astronautics), Beijing, China	
	M.S., Aircraft Design	Sep 2012 to Jun 2015
	<ul style="list-style-type: none">• Advisor: Prof. Yunfeng Dong	
	B.S., Aircraft Design & Engineering	Sep 2008 to Jun 2012
PUBLICATIONS	<ol style="list-style-type: none">1. Chen, Z., Wang, K., and Shi, H. "Elongation of curvature-bounded path," <i>Automatica</i> Vol. 151, 2023, p. 110936. (IF: 6.150)2. Wu, D., Zhang, J., Zhang, J., and Shi, H. "A Novel Deep Link Prediction Model for Peer-to-Peer Dynamic Task Collaboration Networks," <i>Peer-to-Peer Networking and Applications</i> Vol. 15, No. 4, 2022, pp. 1775-1791. (IF: 2.670)3. Li, X., Chen, W., Chen, Z., Wang, T., and Shi, H. "Fixed-Time Circular Impact-Time Guidance with Look Angle Constraint," <i>Aerospace</i> Vol. 9, No. 7, 2022, p. 356. (IF: 2.660)4. Hou, L., Zhu, J., Shi, H., and Kuang, M. "A novel calculation and simulation method on missile killing effect," <i>International Journal of Modeling, Simulation, and Scientific Computing</i>, 2022, p. 2350006.5. Wang, C., Ren, H., Kuang, M., Shi, H. "Simulation of Unmanned Tank Cooperative Combat Based on Military Rules," <i>Journal of System Simulation</i>, Vol. 34, No. 8, 2022, p. 1691. (In Chinese)	

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7. **Shi, H.**, Zhu, J., Kuang, M., and Yuan, X. "Cooperative prediction guidance law in target-attacker-defender scenario," *Science China Information Sciences* Vol. 64, No. 4, 2021, p. 149201. (IF: 7.275)
8. **Shi, H.**, Zhu, J., Kuang, M., and Hou, L. "Optimal Launch Time Selection in Target-Missile-Defender Scenario," *2021 European Control Conference (ECC)*. IEEE, Delft, Netherlands, 2021, pp. 2374-2379.
9. **Shi, H.**, Chen, Z., Zhu, J., and Kuang, M. "Model predictive guidance for active aircraft protection from a homing missile," *IET Control Theory and Applications* Vol. 16, No. 2, 2021, pp. 208-218. (IF: 2.670)
10. Hou, L., Zhu, J., Kuang, M., and **Shi, H.** "Impact Angle Control Guidance to Intercept Moving Targets by Virtual Target Technique," *International Journal of Aerospace Engineering* Vol. 2021, 2021, pp. 1-12. (IF: 1.198)
11. **Shi, H.** "Cooperative Guidance on Aircraft Terminal Active Protection," Beijing, China: Tsinghua University, 2020. (Ph.D Thesis)
12. **Shi, H.**, Zhu, J., Kuang, M., and Yuan, X. "Predictive Guidance Strategies for Active Aircraft Defense," *AIAA Scitech 2019 Forum*. AIAA, USA, 2019, p. 2343.
13. **Shi, H.**, Zhu, J. "Optimal Cooperative Prediction Guidance Law for Active Defense," *Aerospace Control and Application*, Vol. 45, No. 4, 2019, pp. 64-70. (In Chinese)
14. **Shi, H.**, Zhu, J., Yuan, X., Kuang, M., Wang, W., and Deng, Z. "Research on Intercepting Strategy of Multiple Kill Vehicle in Midcourse Defense Based on Multi-Sensors Fusion Method," *IFAC World Congress 2017*. Vol. 50, Elsevier, France, 2017, pp. 15032-15037.
15. **Shi, H.**, and Zhu, J. "Trajectory Planning of Approaching Non-cooperative Targets Based on Gauss Pseudospectral Method," *27th AAS/AIAA Space Flight Mechanics Meeting*. Vol. 160, Univelt, 2017, pp. 1527-1538.
16. **Shi, H.**, Zhu, J. "Research on Application Specification of Chinese Domestic Satellite Technology in Field of Intelligent Tourism," *China Satellite Navigation Conference (CSNC)*. 2017. (In Chinese)
17. Wei, X., Dong, Y., Liu, F., Tian, L., Hao, Z., and **Shi, H.** "Principal component analysis and cluster analysis based orbit optimization for earth observation satellites," *Journal of Chongqing University English Edition* Vol. 15, No. 3, 2016, pp. 83-94.
18. Wei, X., **Shi, H.**, Tian, L., Hao, Z., and Zhang, C. "Design and Development of a Universal Verification System for Satellite Data Management System Based on AOS," *Instrumentation and Measurement, Computer, Communication and Control (IMCCC) 2015*. IEEE, 2015, pp. 318-321.
19. **Shi, H.**, and Dong, Y. "Research on cooperative control of human-computer interaction tools with high recognition rate based on neural network," *2014 International Conference on Virtual Reality and Visualization*. IEEE, 2014, pp. 350-354.

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PATENTS

1. **Heng Shi**, Jihong Zhu, Minchi Kuang, et al. "A predictive guidance method in three-body conflict using fixed point optimization". ZL202011086110.6.
2. **Heng Shi**, Jihong Zhu, Minchi Kuang, et al. "An optimal predictive guidance technique in three-body conflict using golden section search". ZL202010923657.0.
3. **Heng Shi**, Jihong Zhu, Minchi Kuang, et al. "Optimal launch timing search method for active defense missiles using predictive guidance". ZL201910739750.3.
4. **Heng Shi**, Jihong Zhu. "A real-time multi-prediction guidance law for aircraft defending missile". ZL201818001011.0.
5. Jihong Zhu, **Heng Shi**. "A three-dimensional real-time omnidirectional guidance law". ZL201810246200.3.
6. Libing Hou, Jihong Zhu, **Heng Shi**, et al. "A method for calculating the killing effect in the terminal guidance phase of missile". ZL202110055519.X.
7. Libing Hou, Jihong Zhu, **Heng Shi**, et al. "A method for calculating the killing effect in the terminal guidance phase of missile". ZL202010923639.2.
8. Xinghui Yan, Jihong Zhu, Minchi Kuang, Wufan Wang, **Heng Shi**. "Aircraft full-automatic pneumatic optimization method based on reinforcement learning and transfer learning". ZL201811217192.6.
9. Xinghui Yan, Jihong Zhu, Minchi Kuang, Wufan Wang, **Heng Shi**. "Aircraft pneumatic optimization method based on data mining and genetic algorithm". ZL201811216160.4.

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