Zhiyi Xiang

Ph.D. Candidate, College of Advanced Interdisciplinary Studies, National University of Defense Technology, Changsha, Hunan, China

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Employment History

2019 **Xuelong 2,** Jiangnan Shipyard, Shanghai.

Education

2022 – 2025 **Ph.D.** in Optical Engineering, National University of Defense Technology, China.

2019 – 2021 **M.Sc.** in Optical Engineering, National University of Defense Technology, China.

2015 – 2019 **B.Sc.** in Optoelectronic Information Science and Engineering, Anhui University of Technology, China.

Selected Awards and Fellowships

2022 First Prize Freshman Scholarship of National University of Defense Technology.

2019 Outstanding Graduate for Excellence in Both Character and Academics by Anhui Province.

Research Interests

- **Vehicle-Mounted Laser Doppler Velocimetry:** Researching various structures of vehicle-mounted laser Doppler velocimeters and using them to obtain multi-dimensional velocity information and attitude information of vehicles.
- **Integrated Navigation Technology:** Studying integrated navigation methods for SINS of various accuracy levels with GNSS, OD, LDV, and other systems, with particular emphasis on deep integration with LDV.
- **Inertial Navigation Technology:** Focusing on error modeling and suppression of SINS at different accuracy levels.

Research Publications (Main Contributor - Top Three)

Journal Articles

1. R. Huang, Q. Wang, **Z. Xiang**, X. Nie, J. Zhou, and H. Luo, "A water track laser doppler velocimeter for use in underwater navigation," *Measurement Science and Technology*, vol. 35, no. 5, p. 056 301, Feb. 2024. DOI: 10.1088/1361-6501/ad21d6.
2. **Z. Xiang**, Q. Wang, R. Huang, S. Jin, X. Nie, and J. Zhou, "A robust online calibration method for sins/ldv integrated navigation system based on position observation," *IEEE Sensors Journal*, vol. 24, no. 1, pp. 895–908, Jan. 2024. DOI: 10.1109/JSEN.2023.3333898.
3. **Z. Xiang**, Q. Wang, S. Jin, X. Nie, and J. Zhou, "Online calibration method for sins/ldv integrated navigation system based on left group error definition," *Measurement Science and Technology*, vol. 35, no. 5, p. 055 106, Feb. 2024. DOI: 10.1088/1361-6501/ad24b8.

4. **Z. Xiang**, Q. Wang, X. Nie, S. Jin, and J. Zhou, "Lstm-assisted sins/2d-ldv tightly coupled integration approach using local outlier factor and adaptive filter," *IEEE Transactions on Instrumentation and Measurement*, pp. 1–1, 2024. DOI: 10.1109/TIM.2024.3502729.
5. R. Huang, Q. Wang, **Z. Xiang**, X. Nie, J. Zhou, and H. Luo, "Water track laser doppler velocimeter [invited]," *Chinese Optics Letters*, vol. 21, no. 9, p. 090 005, Sep. 2023. DOI: 10.3788/COL202321.090005.
6. **Z. Xiang**, Q. Wang, R. Huang, S. Jin, X. Nie, and J. Zhou, "Online calibration method for pitch-independent laser doppler velocimeter based on improved integrated navigation model," *IEEE Transactions on Instrumentation and Measurement*, vol. 72, pp. 1–13, Sep. 2023. DOI: 10.1109/TIM.2023.3315425.
7. **Z. Xiang**, T. Zhang, Q. Wang, *et al.*, "A sins/gnss/2d-ldv integrated navigation scheme for unmanned ground vehicles," *Measurement Science and Technology*, vol. 34, no. 12, p. 125 116, Aug. 2023. DOI: 10.1088/1361-6501/acf2b4.
8. **Z. Xiang**, Q. Wang, R. Huang, C. Xi, X. Nie, and J. Zhou, "A fast robust in-motion alignment method for laser doppler velocimeter-aided strapdown inertial navigation system," *IEEE Sensors Journal*, vol. 22, no. 17, pp. 17 254–17 265, Aug. 2022. DOI: 10.1109/JSEN.2022.3191120.
9. **Z. Xiang**, Q. Wang, R. Huang, C. Xi, X. Nie, and J. Zhou, "In-motion initial alignment method for a laser doppler velocimeter-aided strapdown inertial navigation system based on an adaptive unscented quaternion h-infinite filter," *Measurement Science and Technology*, vol. 33, no. 3, p. 035 001, Dec. 2021. DOI: 10.1088/1361-6501/ac37e9.
10. **Z. Xiang**, Q. Wang, R. Huang, C. Xi, X. Nie, and J. Zhou, "Position observation-based calibration method for an ldv/sins integrated navigation system," *Applied Optics*, vol. 60, no. 26, pp. 7869–7877, Sep. 2021. DOI: 10.1364/AO.430866.

Conference Proceedings

1. **Z. Xiang**, Q. Wang, and J. Zhou, "In-motion initial alignment method for ldv-aided sins based on robust unscented quaternion filter," in *Proceedings of the 2021 5th International Conference on Electronic Information Technology and Computer Engineering*, Xiamen, China, 2022, pp. 254–259.
2. **Z. Xiang** and J. Zhou, "An in-motion alignment method for laser doppler velocimeter-aided strapdown inertial navigation system," in *Advances in Precision Instruments and Optical Engineering*, Singapore, 2022, pp. 323–334.

Patents

1. J. Zhou, **Z. Xiang**, Q. Wang, *et al.*, *High-precision inertial navigation method and device based on 2d ldv and inertial navigation system (in chinese)*, Invention Patent, Chinese Patent CN202311519458.3, Feb. 2024.
2. J. Zhou, **Z. Xiang**, Q. Wang, *et al.*, *A loosely coupled land integrated navigation method, apparatus, computer equipment and medium (in chinese)*, Invention Patent, Chinese Patent CN202211725821.2, Mar. 2023.
3. J. Zhou, **Z. Xiang**, Q. Wang, *et al.*, *A tightly coupled land integrated navigation method, apparatus, computer equipment and medium (in chinese)*, Invention Patent, Chinese Patent CN202211725810.4, Apr. 2023.
4. J. Zhou, **Z. Xiang**, Q. Wang, *et al.*, *Calibration method, apparatus, computer equipment and medium for two-dimensional doppler velocimeters (in chinese)*, Invention Patent, Chinese Patent CN202211726268.4, Apr. 2023.
5. J. Zhou, **Z. Xiang**, Q. Wang, *et al.*, *Fault-tolerant integrated navigation method and device based on 2d ldv and inertial navigation system (in chinese)*, Invention Patent, Chinese Patent CN202311512395.9, Dec. 2023.
6. J. Zhou, **Z. Xiang**, Q. Wang, *et al.*, *Method and apparatus for online calibration of laser doppler velocimeter based on position observation (in chinese)*, Invention Patent, Chinese Patent CN202310586804.3, Aug. 2023.

7. **Z. Xiang**, J. Zhou, Q. Wang, *et al.*, *Integrated navigation method and device based on dual laser doppler velocimeter and inertial navigation system (in chinese)*, Invention Patent, Chinese Patent CN202210410200.9, Jul. 2022.
8. **Z. Xiang**, J. Zhou, X. Nie, *et al.*, *A phase modulated double homodyne interferometer based on measuring multiple reflections of optical paths (in chinese)*, Invention Patent, Chinese Patent CN202110391840.5, Jun. 2021.
9. **Z. Xiang**, J. Zhou, Q. Wang, *et al.*, *An in-motion initial alignment method for inertial navigation system based on laser doppler velocimeter (in chinese)*, Invention Patent, Chinese Patent CN202110403858.2, May 2021.

Skills

Languages	Mandarin Chinese (Native language), English (CET6).
Coding	Matlab, Qt, C/C++, Markdown, LaTeX, …
Sports	Table tennis, basketball, running, e-sports, …
Misc.	Academic research, reading and writing academic papers, …

Academic Service

Journal Reviewer

Independent Review	Measurement, IEEE Sensors Journal, Scientific Reports, Measurement Science and Technology.
Co-review	IEEE TAES, IEEE TVT, IEEE TIM.

Certification

2024	`IOP Trusted Reviewer.`
2023	Outstanding Volunteer of the First Frontier Interdisciplinary Science Conference on Optical Engineering.

References

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