

Xuan Zhou, Ph.D.

Postdoc at Beihang University


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Academic Experience

2024 – ····  **Postdoc**, School of Aeronautic Science and Engineering, Beihang University.







Education




- 2019 – ····  **Ph.D., Politecnico di Milano** Mechanical Engineering.
Thesis title: *On the Development of Digital Twin for Aircraft Load and Fatigue Tracking at Individual and Fleet Levels.*
Supervisor: Prof. Claudio Sbarufatti
- 2017 – 2024  **Ph.D., Beihang University** in Aeronautical Engineering
Thesis title: *Digital Twin based Flight Load and Structural Fatigue Tracking for an Unmanned Aerial Vehicle.*
Supervisor: Prof. Leiting Dong
- 2013 – 2017  **B.Sc. Engineering, Beihang University** in Aeronautical Engineering.
Thesis title: *Aircraft Pit-Stop Servicing Process Algorithm and Software Implementation.*

Research Activities




Xuan's research interests include structural integrity, airframe digital twins, structural health monitoring, and surrogate modeling. He has published 9 articles in mainstream peer-reviewed journals in aeronautical and mechanical engineering, including the AIAAJ (5), MSSP, etc.

Journal Articles

- 1 F. Zhao, **X. Zhou***, S. He, C. Wang, L. Dong, and S. N. Atluri, "B-Spline Surface-Based Reduced-Order Modeling of Nonplanar Crack Growth in Structural Digital Twins," *AIAA Journal*, pp. 1–14, Oct. 2023, ISSN: 0001-1452.  DOI: 10.2514/1.J062959.
- 2 F. Zhao, **X. Zhou***, C. Wang, L. Dong, and S. N. Atluri, "Setting Adaptive Inspection Intervals in Helicopter Components, Based on a Digital Twin," *AIAA Journal*, vol. 61, no. 6, pp. 2675–2688, Feb. 2023, ISSN: 0001-1452.  DOI: 10.2514/1.J062222.
- 3 **X. Zhou**, D. Oboe, D. Poloni, C. Sbarufatti, L. Dong, and M. Giglio, "Cluster-Based Joint Distribution Adaptation Method for Debonding Quantification in Composite Structures," *AIAA Journal*, vol. 61, no. 2, pp. 831–842, Feb. 2023, ISSN: 0001-1452.  DOI: 10.2514/1.J062417.
- 4 **X. Zhou**, C. Sbarufatti, M. Giglio, and L. Dong, "A fuzzy-set-based joint distribution adaptation method for regression and its application to online damage quantification for structural digital twin," *Mechanical Systems and Signal Processing*, vol. 191, p. 110 164, May 2023, ISSN: 0888-3270.  DOI: 10.1016/j.ymssp.2023.110164.
- 5 **X. Zhou**, C. Sbarufatti, M. Giglio, L. Dong, and S. N. Atluri, "Copula-Based Collaborative Multistructure Damage Diagnosis and Prognosis for Fleet Maintenance Digital Twins," *AIAA Journal*, vol. 61, no. 10, pp. 4735–4740, Jun. 2023, ISSN: 0001-1452.  DOI: 10.2514/1.J063105.
- 6 S. He, C. Wang, **X. Zhou***, L. Dong, and S. N. Atluri, "Weakly Singular Symmetric Galerkin Boundary Element Method for Fracture Analysis of Three-Dimensional Structures Considering Rotational Inertia and Gravitational Forces," *Computer Modeling in Engineering & Sciences*, vol. 131, no. 3, pp. 1857–1882, 2022, ISSN: 1526-1506.  DOI: 10.32604/cmescs.2022.019160.

- 7 **X. Zhou**, S. He, L. Dong, and S. N. Atluri, "Real-Time Prediction of Probabilistic Crack Growth with a Helicopter Component Digital Twin," *AIAA Journal*, vol. 60, no. 4, pp. 2555–2567, Apr. 2022, ISSN: 0001-1452.  DOI: 10.2514/1.J060890.
- 8 L. Dong, **X. Zhou**, F. Zhao, S. He, Z. Lu, and J. Feng, "Key technologies for modeling and simulation of airframe digital twin," *Acta Aeronautica et Astronautica Sinica*, vol. 42, no. 3, pp. 113–141, Mar. 2021, ISSN: 1000-6893.  DOI: 10.7527/S1000-6893.2020.23981.
- 9 Fubin, He, **X. Zhou**, and L. Zhao Dong, "An intelligent digital-twin-based strategy for the inspection and maintenance of aircraft skin cracks," *Chinese Journal of Solid Mechanics*, vol. 42, no. 3, pp. 277–286, Jun. 2021, ISSN: 0254-7805.  DOI: 10.19636/j.cnki.cjasm42-1250/o3.2021.030.





Conference Proceedings

- 1 **X. Zhou**, C. Sbarufatti, M. Giglio, and L. Dong, "Copula-Based Multi-structure Damage Co-diagnosis and Prognosis for the Fleet Maintenance Digital Twin," in *Computational and Experimental Simulations in Engineering*, S. Li, Ed., ser. Mechanisms and Machine Science, Cham: Springer International Publishing, 2024, pp. 1349–1357, ISBN: 978-3-031-42515-8.  DOI: 10.1007/978-3-031-42515-8_95.
- 2 **X. Zhou**, L. Dong, M. Giglio, and C. Sbarufatti, "Diagnosis and Prognosis of Structural Damage Growth with Parameter Sharing in Fleet Maintenance Digital Twins," in *Aerospace Europe Conference 2023 Joint 10th EUCASS – 9th CEAS*, Lausanne, Switzerland: EUCASS, Aug. 2023.  DOI: 10.13009/EUCASS2023-095.
- 3 **X. Zhou**, M. Dziendzikowski, K. Dragan, L. Dong, M. Giglio, and C. Sbarufatti, "Generating High-Resolution Flight Parameters in Structural Digital Twins Using Deep Learning-based Upsampling," in *2023 Prognostics and Health Management Conference (PHM)*, New York, USA: IEEE, May 2023, pp. 318–323.  DOI: 10.1109/PHM58589.2023.00065.

Books and Chapters

- 1 **X. Zhou** and L. Dong, "Digital twin driven damage diagnosis and prognosis of complex aircraft structures," in *Handbook of Digital Twins*, Z. Lv, Ed., Boca Raton, USA: CRC Press, 2024.

Honors and Awards

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| 2023 |  ICCES Best Student Award , 29th International Conference on Computational & Experimental Engineering and Sciences.
 Distinction Graduate of Beijing , Beijing Municipal Education Commission
 AVIC First Prize Scholarship , Aviation Industry Corporation of China |
| 2017 |  Distinction Graduate of Beihang , Beihang University |