

# Pengcheng Wu

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CONTACT INFORMATION	<i>Address:</i> Engineering Building Unit I, Room 2205, La Jolla, CA, 92093; 5500 Campanile Dr, E302, San Diego, CA, 92182	<i>Phone:</i> +1-919-903-5793 <i>E-mail:</i> <a href="mailto:pcwupat@ucsd.edu">pcwupat@ucsd.edu</a> <a href="mailto:pwu@sdsu.edu">pwu@sdsu.edu</a> <i>Web:</i> <a href="http://pengcheng-wu.github.io">pengcheng-wu.github.io</a>
BIOGRAPHY	I am now a PhD student with the Joint Doctoral Program of Mechanical and Aerospace Engineering, University of California, San Diego and San Diego State University. My research advisors are Professor <a href="#">Jun Chen</a> and Professor <a href="#">Sonia Martínez</a> . I received both Bachelor and Master degree from Department of Aerospace Engineering, Nanjing University of Aeronautics and Astronautics, advised by Professor <a href="#">Dongping Jin</a> and Professor <a href="#">Hao Wen</a> . My research interests concentrate on dynamics, guidance and control for unmanned vehicles. Recently I am working on the data-driven path planning and control of multi-agent systems in the presence of uncertainty.	
EDUCATION BACKGROUND	<b>Ph.D. Student</b> August 2019 - present University of California San Diego / San Diego State University <ul style="list-style-type: none"><li>• Joint Doctoral Program of Mechanical and Aerospace Engineering</li><li>• Advisors: Professor Jun Chen, Professor Sonia Martínez</li><li>• Doctoral Qualifying Exam (DQE) passed</li><li>• Research Topic: Data-driven path planning and control of multi-agent systems in the presence of uncertainty</li></ul> <b>Nanjing University of Aeronautics and Astronautics</b> , Nanjing, Jiangsu, China M.S., Aerospace Engineering, April 2017 <ul style="list-style-type: none"><li>• Excellent Graduate Student</li><li>• Thesis: <i>Dynamic Modeling and Control for Space Structures Using Gyroscopes</i></li><li>• Advisors: Professor Dongping Jin, Professor Hao Wen</li><li>• Area of Study: Dynamics and Control</li></ul> B.S., Aerospace Engineering, June 2014 <ul style="list-style-type: none"><li>• Excellent Undergraduate Student</li><li>• Mechanics Specialization (with emphasis on structural strength and vibration)</li></ul>	
PUBLICATIONS	<ul style="list-style-type: none"><li>[1] Safety Assured Online Guidance with Airborne Separation for Urban Air Mobility Operations in Uncertain Environments, P. C. Wu, X. X. Yang, P. Wei, J. Chen. <i>IEEE Transactions on Intelligent Transportation Systems</i>. (Submitted)</li><li>[2] <a href="#">Risk-bounded Path Planning for Unmanned Aircraft System Operations under Uncertainty</a>, P. C. Wu, J. F. Xie, Y. C. Liu, J. Chen. <i>IEEE Transactions on Intelligent Transportation Systems</i>. (Submitted)</li><li>[3] Comparisons of RRT and MCTS for Safe Assured Path Planning in Urban Air Mobility, P. Wu, J. Chen. <i>AIAA SciTech Forum</i>, San Diego, California, 2022. (Accepted)</li></ul>	

- [4] Safe Path Planning for Unmanned Aerial Vehicle under Location Uncertainty, P. C. Wu, J. F. Xie, J. Chen. *16th IEEE International Conference on Control and Automation*, Sapporo, Hokkaido, Japan, 2020. (DOI:10.1109/ICCA51439.2020.9264542)
- [5] Probabilistic Guaranteed Path Planning for Safe Urban Air Mobility using Chance Constrained RRT\*, P. C. Wu, L. Li, J. F. Xie, J. Chen. *AIAA AVIATION Forum and Exposition*, Reno, Nevada, 2020. (DOI: 10.2514/6.2020-2914)
- [6] Attitude Maneuver Control and Vibration Suppression of Spacecraft with Flexible Appendages via Control Moment Gyroscopes (in Chinese), Wu, P. C. *M. Sc. dissertation, Nanjing University of Aeronautics and Astronautics*, 2017.
- [7] Model predictive control of rigid spacecraft with two variable speed control moment gyroscopes, Wu, P. C., Wen, H., Chen, T., and Jin, D. P. *Applied Mathematics and Mechanics*, 38(11), 1551-1564, 2017. (DOI: 10.1007/s10483-017-2278-9)
- [8] The attitude maneuver of a large space structure based on nonlinear model predictive control (in Chinese), Wu, P. C., Wen, H., Chen T., and Jin, D. P. *The 2nd Academic Conference of Deployable Space Structures*, Beijing, China, 2016.

PROFESSIONAL  
EXPERIENCE

**Publication Reviewer**

- IEEE Transactions on Intelligent Transportation Systems
- American Control Conference
- IEEE International Conference on Control and Automation
- AIAA Scitech Forum
- AIAA Aviation Forum and Exposition

**Conference Attendance/Presentation**

- AIAA SciTech Forum 2022 (coming)
- 16th IEEE International Conference on Control and Automation (October 2020)
- AIAA AVIATION Forum and Exposition (June 2020)
- UCSD MAE Graduate Seminar (March 2020)
- Southern California Control Workshop (January 2020)

**Academic Society Membership**

- Student Member, AIAA (2020 - present)
- Student Member, IEEE HKN (2020 - present)

**Teaching Assistant**

- AE696 State Space Flight Control

**Research Assistant**

- Department of Biomedical Engineering, UNC Chapel Hill, NC, US  
Aug. 2018 - May. 2019  
Topic: medical images segmentation, filtering, 3D reconstruction, and finite element modeling
- State Key Laboratory of Mechanics and Control of Mechanical Structures, Nanjing, China  
Apr.2017 - Jul.2018

Topic: dynamic modeling and control of rigid or flexible spacecraft models using control moment gyros

### Internship

- Shenyang Aircraft Corporation, Shenyang, Liaoning, China  
Jul.2013 - Aug.2013

Topic: casting, forging, machining, and producing of metal assemblies and devices

### EXPERTISE AND SKILLS

- Dynamic experiment instruments like binocular cameras, Zigbee, Spider81
- Computer aided design softwares like AutoCAD, Catia
- Image processing softwares like ImageJ
- Finite element simulation softwares like Ansys, Abaqus
- Programming languages like Python, Matlab (and Simulink)
- Popular algorithms of path planning and control for unmanned vehicles

### HONORS AND AWARDS

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| • University Fellowship  | 2021-2022 |
| • Admission into IEEE HKN  | Jan. 2020 |
| • Excellent Student Scholarship  | 2017      |
| • Award of the Excellent Graduate Student                                | Apr. 2017 |
| • First prize in Mathematical Modeling Competition                       | Jun. 2016 |
| • Full Scholarship for Master Student                                    | Sep. 2014 |
| • First prize in 4th Social Science Competition for Engineering Students | Jun. 2013 |
| • First prize in Fluid Mechanics Experiment Competition                  | Dec. 2012 |