XIN SHAN | Curriculum Vitae

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Education Background

- **Rutgers University** — **New Brunswick, USA**
  Doctor of Philosophy, Mechanical and Aerospace Engineering — *9/2018–present*
  Advisor: Dr. Onur Bilgen
- **Zhejiang University** — **Hangzhou, China**
  Master of Science, Mechatronic Engineering — *9/2015–6/2018*
  Exam-exempted recommended student
  Advisor: Prof. Canjun Yang
- **Central South University** — **Changsha, China**
  Bachelor of Engineering, Mechanical Engineering — *9/2011–6/2015*
  Overall weighted average: 90/100 (Top 2% student)
  Advisor: Prof. Xiaoqian Li, Prof. Yongcheng Lin

Publications

Journals

- **Shan, X.,** Yang, C., Wu, S., Chen, Y., Zhou, P., (2017). Integrated underwater optical guiding and communicating devices between an AUV and sea network nodes. *Ocean Engineering.* (Under Review)
- Zhu, Y., Yang, C., Wu, S., Zhou, P., & **Shan, X.** (2016). Steering performance of underwater glider in water column monitoring. *Journal of Zhejiang University (Engineering Science)*, 50(9), 1637-1645.

Conference Proceedings

- **Shan, X.,** Yang, C., Chen, Y., Xia, Q. (2017, November). A free-space underwater laser communication device with high pulse energy and small volume. In OCEANS'17 MTS/IEEE Anchorage. IEEE. (Presenter)
- Xia, Q., Chen, Y., Zang, Y., **Shan, X.,** Yang, C., Zhang, Z. (2017, November). Ocean profiler power system driven by temperature difference energy. In OCEANS'17 MTS/IEEE Anchorage. IEEE.

Patents

- Yang, C., Hua, X., Wu, S., **Shan, X.,** Zhou, P., Zhi, H., Chen, Y. (2018). An integrated device for deep sea optical communication and track. *CN109245821A.* (Pending)
- Yang, C., Zhou, P., Wu, S., Zhu, Y., **Shan, X.,** & Xu, X. (2016). Releasable bottom sitting device for underwater profiler. *CN106197384A.*
- Liu, G., **Shan, X.,** Feng, Z., Xu, N., Qin, Z., ... & Lu, Z. (2015). An comprehensive processing system of automobile exhaust . *CN204099004U.*

Thesis & Projects

- **Master Thesis (2016-2018):** *'Research on Laser Information and Energy Transmission Between Sea Observatory Network and AUV.'*

  This thesis aimed to integrate the communication and positioning functions into one portable device, which can guide underwater vehicles to the nodes of sea observatory network and allow the information and energy exchanging between them. I wrote an algorithm (FPGA Verilog), designed the hardware, and did the thermal and optical design for this system. A preliminary experiment of underwater laser charging was also included.

- **National High-Tech R&D Program of China (No.2014AA09A513-1):** *'Monitoring and Networking Technology of Autonomous Portable Profiler'*

  As a team member, my attribution was mainly on designing of main control board hardware (PCB), data logging program (STM32 Platform / C++Programing Language) and some auxiliary devices (deploy and recovery devices, etc.). I also worked with my team to assemble and debug the profiler. I attended the sea trial in July 2017 cooperated with 715 Institute of China Shipbuilding Industry Corporation.

- **The National Key R&D Program of China:** *'Development of Air-Tight Sampling Device for Deep Sea Water and Sediments'*

  The research on developing an extremely low power consumption optical communication system for the deep sea sampler was conducted in this project.

- **Bachelor Thesis (2014-2015):** *'Design of Multi-Physical Field Aluminum Alloy Hemi-Continuous Casting Machine — Aluminum Liquid Level Control Systems'*

  I investigated the factory site and designed a hemi-continuous casting system. Moreover, I established mathematics and control model for the system and wrote program (PLC) of it, and designed the structure of the actuator.

- **Central South University Undergraduate Free Exploration Program (2013-2014):** *'Study on Nonlinear Dynamic Response of Spur Gears with Clearance and Friction'*

  This was a university funded project, of which I am the PI of a 5-student group. We established the dynamic model of the gear and get the destruction mechanism and the allowable extreme working conditions.

- **National Contest of Energy Saving & Emission Reduction (2012-2013):** *'Comprehensive Purification System for Automobile Exhaust Based on Seebeck Effect and PM2.5 Electrostatic Removal Technology'*

  This was a national contest held by China's ministry of education. I was a key member of a 5 people group, who was in charge of the design of an electricity generation system. We won a national second prize in this contest.

Technical Skills

- **Programming Language:** VHDL, Verilog, C, C++, Assembly Language (Intel 8051 Platform), LabVIEW, LaTeX, Matlab, Maple, Mathematica, etc.
- **Software:** COMSOL, ANSYS, Altium Designer, Xilinx ISE (FPGA Development Environment), TracePro (Optical Simulation Software), AutoCAD, SolidWorks, KeyShot, 3Ds Max, Catia, Pro/E, Visual Studio, Keil, Multisim, etc.

Fellowships & Awards

- **Teaching Assistantship** — **Rutgers University**
  Teaching Assistant of 'Dynamics' and 'Aircraft Flight Dynamics' — *09/2018*
- **Outstanding Student** — **Zhejiang University**
  Awarded to excellent graduate students — *12/2016*
- **Outstanding Graduate** — **Central South University**
  Awarded to excellent undergraduate students — *6/2015*
- **National Scholarship** — **Ministry of Education**
  Awarded to top students — *10/2013*