

Shuaihu WU

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EDUCATION

Tsinghua University (expected to graduate in July, 2023)

Beijing, China

Master in Mechanical Engineering - Lab of Precision Equipment & Control; GPA: 3.63/4.0

2020 - Present

- **Core Courses:** Modern Mechatronics System, Introduction to Modern Control Theories and Methods, Advanced Numerical Analysis, Mechatronic Intelligent Control Engineering
- **Research Field:** Sensorless Control, Ultra-precision Control, Motor Driver Design
- **Scholarship:** Outstanding Postgraduate Students Award of Tsinghua University (First Prize)

École CentraleSupélec

Paris, France

Master in Engineering (Dual degree); GPA: 4.00/4.3

2018 - Present

- **Core Courses:** Enterprise Management, Financial Management, Philosophy, Algorithm, Electronics, Quantum Physics,

Université Paris-Saclay

Paris, France

Bachelor in Mathematics (Dual degree); GPA: 3.00/4.0

2019 - 2020

- **Core Courses:** Measure and Probability, Topology, Ordinary Differential Equation, Abstract Algebra, Holomorphic Function

Tsinghua University

Beijing, China

Bachelor in Mechanical Engineering; GPA: 3.37/4.0

2016 - 2020

- **Core Courses:** Theoretical Mechanics, Calculus, Linear Algebra, Discrete Mathematics, Basic Program Design
- **Program:** Selected for "Sino-France 4+4" Program(a double diploma program with 2 years in China and 2 years in France)
- **Scholarship:** China Scholarship Council (CSC) Scholarship

PUBLICATIONS AND PATENTS

- [1] **S. Wu**, C. Hu, Z. Zhao, R. Zhou, and Y. Zhu, "A Novel Flux Estimator using α - β Orthogonality Drift Elimination for High Performance Full-speed-range Sensorless Control," [2022 IEEE/ASME AIM](#) (Oral Report)
- [2] Z. Zhao, C. Hu, Z. Wang, **S. Wu**, Z. Liu, Y. Zhu, "Back EMF-Based Dynamic Position Estimation in the Whole Speed Range for Precision Sensorless Control of PMLSM," [IEEE Trans. Ind. Inform., 2022](#)
- [3] **S. Wu**, C. Hu, Z. Zhao, and Y. Zhu, "High Accuracy Sensorless Control of Permanent Magnet Linear Synchronous Motors for Variable Speed Trajectories," *Submitted to IEEE Trans. Ind. Electron.*
- [4] C. Hu, **S. Wu**, Z. Zhao, "Method and Device to Find Motor Position," *CN115632588A, 2023-01-20.*
- [5] E. Wang, C. Hu, X. Liu, B. Feng, **S. Wu**, "Crawling Robot," *CN114248252A, 2022-03-29.*
- [6] E. Wang, X. Liu, C. Hu, **S. Wu**, B. Feng, "Pole Climbing Device," *CN114161439A, 2022-03-11.*

RESEARCH AND PROJECTS

Research on sensorless control

2021-2023, Tsinghua, Beijing

- Proposed a novel flux estimator that can improve the performance of sensorless control in full speed range, with increased accuracy and dynamic response.
- Theoretical proof of stability and criteria of parameter selection was given.
- Built an experiment set including a permanent magnet linear synchronous motor, a motor driver and a controller.
- Achieved a sensorless position estimation accuracy less than 50 micro meters.
- Author or co-authored 3 papers. (1 Journal paper and 1 conference paper accepted [1-2], 1 journal paper under review [3])
- Drafted and submitted 1 patents [4].

Under-mine Robot Design and Prototype Manufacturing

2020, Tsinghua, Beijing

- Designed and manufactured a moving robot prototype to conduct coal-rock identification and mining condition monitoring.
- Special design for extreme under-mine environment, with flexible structure and a novel displacement strategy.
- Designed and built a high load (>10kg) gimbal and its auto-balance system.
- Drafted and submitted 2 patents [5-6].

Sensor Data Analysis of Wind Farms

2019, CentraleSupélec, Paris

- Work including data cleaning, machine learning, presentation and communication with experts from EDF.
- Produced a script which can analysis the sensor data and predict future failure of wind turbines

Internship as a Production Line Worker

2019, Renault, Paris

- Worked in the production line as a ordinary worker; made interviews with line manager.
- Written a report on factory organization and modern production line management.

Virtual Design of an Electron Synchrotron

2019, CentraleSupélec, Paris

- Work including literature research, magnetic field design, presentation and communication with experts.
- Written a report on principle and engineering realization of an electron synchrotron.

ACTIVITIES

Volunteer of 2022 Beijing Winter Olympics

Feb 2022 - Apr 2022, Beijing, China

- Worked in the anti-doping team during the Olympic and Paralympic game.
- Honored as "Outstanding Volunteer in Olympics of Tsinghua University" (10% of the volunteers)

President of Chinese-French Association of Tsinghua University

Sep 2020 - Sep 2021, Beijing, China

- Organized several activities about French culture and volunteered at French embassy to help to promote French education.
- Invited to attend the national day dinner party at French embassy.

Work-exchange in a Swiss Family

Aug 2019, Sion, Switzerland

- Living with local people, work in a Swiss farm in exchange of food and accommodation.

Class Leader

Sep 2017 - Jun 2018, Beijing, China

- Elected as the class leader serving 30 students in Tsinghua University.
- Organized several meeting to discuss concerned issues and several activities to increase the sense of belonging.

Half Marathon

April 2018, Beijing, China

- Finished a half marathon of 21km

PRACTICAL SKILLS

- **Languages** English(IELTS 7.5), French(level B2), Chinese(Native)
- **Coding** Python, C++, \LaTeX
- **Software** MATLAB, Simulink, SolidWorks, AutoCAD