

# Biomechatronics and Biorobotics Laboratory

## School of Mechanical Engineering

### • About the Lab •

Our interdisciplinary research combines mechatronics, robotics, biosignal processing, haptics, and biomechanics to solve important research problems. We focus on clinical devices and applications such as advanced prosthetics, human-machine interface, brain-computer interface, rehabilitation robotics, noninvasive electrical stimulation, and wearable sensing and haptic feedback retraining for movement-related disorders. The Biomechatronics and Biorobotics Laboratory is part of the Robotics Institute in the School of Mechanical Engineering at Shanghai Jiao Tong University and is part of the State Key Laboratory of Mechanical System and Vibration

Detail information please refer to [bbl.sjtu.edu.cn](http://bbl.sjtu.edu.cn)

### • About the Team •

Xiangyang Zhu, Director, Professor

Xiangyang Zhu received the B.S. degree from the Department of Automatic Control Engineering, Nanjing Institute of Technology, Nanjing, China, in 1985, the M.Phil. Degree in instrumentation engineering and the Ph.D. degree in automatic control engineering, both from Southeast University, Nanjing, China, in 1989 and 1992, respectively.

From 1993 to 1994, he was a postdoctoral research fellow with Hua Zhong University of Science and Technology, Wuhan, China. He joined the Department of Mechanical Engineering as an associate professor, Southeast University, in 1995.

Since June 2002, he has been with the School of Mechanical Engineering, Shanghai Jiao Tong University, Shanghai, China, where he is currently a Chang Jiang Chair Professor and the director of the Robotics Institute. His current research interests include robotic manipulation planning, human-machine interfacing, and bio mechatronics. Dr. Zhu received the National Science Fund for Distinguished Young Scholars in 2005.

### • Research Fields •

#### ● Bio-mechatronics

Fundamentals of bio-mechatronic science and technology for human locomotor reconstruction, National Basic Research Program of China (973 Program).

The dexterous prosthetic hand design based on muscle synergy and the enhanced bio-machine interface technology, Shanghai Municipal Science and Technology Commission.

#### ● Robotics

Kinematics and Manipulability of Continuum Robots for Confined Spaces, National Science Foundation of China.

Multi-rotor aviation vehicle for industrial detecting, Siasun Corporation.

### • Responsibility •

The students will participate into different research group according to their interest. They will cooperate with other senior undergraduate students or master students on prototype implementation. Each group will be supervised by one associate professor.

### • Eligibility •

- In principle, we recruit junior and senior students.
- Hold at least a 2.5 GPA on a 4.0 scale
- Students of non-English speaking countries must provide English language proficiency certificate, IELTS no less than 6.0, and TOEFL no less than 90 points. If you are in the college for English

teaching programs, please provide relevant certificates.

- Have at least one prior research experience
- Major in Mechanical Engineering, Software Engineering or Electrical Engineering

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#### • Additional Financial Support •

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Some local subsidies depending on the student participation.

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#### • Contact •

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Person in Charge: Xiangyang Zhu, (021) 3420-6074, mexyzhu@sjtu.edu.cn, 8:30 – 18:00, contact with email in advance.

Contact person: Xinjun Sheng, 135-8598-8674, xjsheng@sjtu.edu.cn, 8:30 – 18:00, Room 916, Building A of Mechanical Engineering.

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#### • Remark •

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- Dexterous bio-mechatronic prosthetic hand
- Non-invasive BCI technique for rehabilitation
- Human-machine interface using bio-signal
- Wearable system for gait detecting