

# Ziang Jiang (Lionel)

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## Background

Holding a Master's degree in Biomedical Engineering with GPA of 3.66/4.0 (91.5%), supervised by Prof. Dr. Tsung-Yuan Tsai. I am good at programming, kinematic and kinetic data processing, 3D model reconstruction, and motion capture techniques. With my research interest in orthopedic biomechanics, I hope to provide better solutions for musculoskeletal disorder diagnosis, conservative treatment, arthroplasty, and postoperative functional evaluation.

## Research Experience

- **Biomechanical Evaluation of Customized Short Stem Femoral Prosthesis implantation for DDH patients**  
Quantifying the anatomical difference caused by normal cementless stem.  
Determining the optimal landmark for predicting the postoperative femoral anteversion.  
Evaluating the biomechanical performance of customized short stem prosthesis.
- **Calculating of the Degrees of Freedom of Spine Based on the Vicon System**  
Calculating the angle among head, thoracic, lumbar and pelvic segments.  
Calculating the range of motion of spine in flexion and extension by fitting curve through infrared reflective markers.
- **Quantifying the Functional Effects Caused by Sarcopenia Disease**  
Comparing the parameters of the center of mass and pressure (range, speed, et al.) in Romberg's test, the joint angle in gait cycle, and the relation between foot and obstacle during crossing.
- **A Radiation-Free Joint Motion Capture Method Based on Dynamic MRI**  
A motion capture method realized by dynamic MRI technique and Slice-to-Volume algorithm which can be applied on the motion of temporal-mandibular joint.

## Honors

Shanghai Excellent Graduate Student Award	Twice in 2020 and 2023
SJTU Excellence Postgraduate Scholarship	2022
SJTU Excellence Academic Scholarship First prize for <b>three times</b> in 2020, 2021 and 2022	
<b>2019 Shanghai Annual Outstanding University Student</b>	<b>Nomination Award</b>
<b>2018 National Scholarship</b>	
2018 Shanghai University Students Electronic Design Competition	First prize
2018 Shanghai University Students Mechanical Innovation Competition	Second prize



## Publication

- [1] **Z. Jiang**#, R. Cheng#, W. Kernkamp, et al. The midcortical-line is more reliable than the T-line in predicting stem anteversion in patients with developmental hip dysplasia after total hip arthroplasty [J]. *Front Surg*. 2022 Sep 1;9:966617.
- [2] C. Liang#, **Z. Jiang**#, Y. Chen, et al. Effect of Different Landing Actions on the Lower Limb Biomechanics of Female College Athletes[J]. *Frontiers in Bioengineering and Biotechnology*, 2022, 10. doi: 10.3389/fbioe.2022.899799.
- [3] R. Cheng#, **Z. Jiang**#, D. Dimitriou, et al. Biomechanical Analysis of Personalised 3D-Printed Clavicle Plates of Different Materials to Treat Midshaft Clavicle Fractures[J]. *Journal of Shanghai Jiaotong University (Science)*, 2021, 26(3): 259-266.
- [4] J. Ye#, **Z. Jiang**#, S. Chen, et al. Rehabilitation Practitioners' Perceptions of Optimal Sitting and Standing Posture in Men with Normal Weight and Obesity[J]. *Bioengineering*, 2023, 10(2): 210.
- [5] H. Chen, **Z. Jiang**, C. Liang, et al. Impacts of gait biomechanics of patients with thoracolumbar kyphosis secondary to Scheuermann's disease[J]. *Frontiers in Bioengineering and Biotechnology*, 2023, 11. doi: 10.3389/fbioe.2023.1192647.
- [6] X. Li#, X. Gu\*#, **Z. Jiang**, et al. Statistical modeling: Assessing the anatomic variability of knee joint space width[J]. *Journal of Biomechanics*, 2023, 147: 111420.
- [7] R. Cheng#, H. Wang#, **Z. Jiang**, et al. The femoral tunnel drilling angle at 45° coronal and 45° sagittal provided the lowest peak stress and strain on the bone tunnels and anterior cruciate ligament graft[J]. *Frontiers in Bioengineering and Biotechnology*, 2021: 1173.
- [8] R. Cheng#, H. Wang#, D. Dimitriou, **Z. Jiang**, et al. Central Femoral Tunnel Placement Can Reduce Stress and Strain Around Bone Tunnels and Graft More than Anteromedial Femoral Tunnel in Anterior Cruciate Ligament Reconstruction[J]. *International Journal for Numerical Methods in Biomedical Engineering*, 2022: e3590.
- [9] C. Fang, R. Cheng, J. Jiang, D. Dimitriou, H. Wang, **Z. Jiang**, et al. An efficient needleless grasping suture technique for graft preparation in anterior cruciate ligament reconstruction[J]. *Frontiers in Surgery*, 626.
- [10] P. Hu#, **Z. Jiang**#, S. Ma, et al. Static postural control in older adults with and without sarcopenia: a study of Romberg test [J]. *Gait & Posture*. Under review.
- [11] R. Cheng#, Y. Li#, **Z. Jiang**#, et al. Could THA Correct Abnormal Acetabular and Femoral Anatomy in DDH patients? *The Journal of Arthroplasty*. Under review.
- [12] **Z. Jiang**, T. Wang, J. Cheng, et al. Research on influencing factors of hemolysis based on rolling blood pump[J]. *International Journal of Biomedical Engineering*, 2020: 123-127. (*Published in undergraduate period*)
- [13] X. Gu, T. Wang, K. Zheng, **Z. Jiang**, et al. Development of a real-time blood damage monitoring device for cardiopulmonary bypass system using near-infrared spectroscopy[J]. *Lasers in Medical Science*, 2021, 36(4): 783-790. (*Published in undergraduate period*)
- [14] J. Ye, **Z. Jiang**, L. Xu, et al. Rehabilitation practitioners perceptions of "optimal" and "harmful" sitting and standing posture[J]. *Rehabilitation Medicine*. Submitted. (*Chinese journal*)
- [15] Y. Wang, Z. Ling, **Z. Jiang**, et al. Review and prospect of analysis methods in human sports biomechanics[J]. *Advances in Mechanics*. Submitted. (*Chinese journal*)
- [16] L. Chen, C. Yang, **Z. Jiang**, et al. Effect of biomechanical characteristics of soldier knee joint during weight bearing single leg landing[J]. *Chinese Journal of Sports Medicine*. Submitted. (*Chinese journal*)



## Patent

- [1] **Ziang Jiang**, Rongshan Cheng, Tsung Yuan Tsai. Self-locking type fixing structure for cruciate ligament reconstruction[P]. CN215130879U, 2021-12-14.
- [2] **Ziang Jiang**, Xiaohu Li, Xuelian Gu, et al. A method and system for automatically measuring curvature of bone surface[P]. CN114018203A, 2022-02-08.
- [3] **Ziang Jiang**, Rongshan Cheng, Tsung Yuan Tsai. Dynamic loading platform for in-vitro hip joint[P]. CN214794133U, 2021-11-19.

- [4] Xiaohu Li, **Ziang Jiang**, Xuelian Gu, et al. A modeling method of bone statistical shape model[P]. CN114140600A, 2022-03-04.
- [5] Rongshan Cheng, Tsung-Yuan Tsai, **Ziang Jiang**, et al. Guider of three-dimensional precise positioning anterior cruciate ligament anatomical reconstruction tunnel[P]. CN212234675U, 2020-12-29.
- [6] **Ziang Jiang**, Lewen Qian, Gengqiang Shi, et al. Detachable hemostat device based on memory alloy characteristics[P]. CN110236634B, 2022-08-02.
- [7] **Ziang Jiang**, Lewen Qian, Gengqiang Shi, et al. Detachable hemostat device based on mechanical design[P]. CN110251187B, 2022-06-17.

## Academic Congress

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- [1] **Ziang Jiang**, Rongshan Cheng, Chunjie Xia, et al. Can T-line be a Reliable Landmark for Correcting the Abnormal Anteversion in Patients with Severely Dysplastic Hips during Total Hip Arthroplasty?. **Oral**. 9th World Congress of Biomechanics 2022.
- [2] **Ziang Jiang**, Ruimin Feng, Nan Zheng, et al. A Novel Dynamic Movement Tracking Method Based on Magnetic Resonance Imaging Slice-to-Volume Registration. **Oral**. 9th World Congress of Biomechanics 2022.
- [3] Liang Chen, **Ziang Jiang**, Size Zheng, et al. Effect of different landing movements on the lower limb biomechanical characteristics of female college athletes. **Oral**. 9th World Congress of Biomechanics 2022.
- [4] Jiling Ye, **Ziang Jiang**, Lili Xu, et al. Investigation and Quantification of Physiotherapist Perceptions of Optimal Sitting and Standing Posture in Normal and Obese People. 17th International Symposium of 3-D Analysis of Human Movement [3D-AHM 2022]. **Oral**. Tokyo University of Science.
- [5] **Ziang Jiang**, Rongshan Cheng, Bo Yu, et al. 3d-printed Customized Short Femoral Stem Has Better Stability Than Conventional Stem In Total Hip Arthroplasty. **Poster**. 2022 ORS ANNUAL MEETING.
- [6] **Ziang Jiang**, Zichuan Tang, Pin Hu, et al. Pre-sarcopenia patients perform significant affected balance control ability: case-control study. The 15<sup>th</sup> Annual Congress of Chinese Orthopaedic Association.
- [7] Zichuan Tang, **Ziang Jiang**, Pin Hu, et al. Quantitative research of negative effects of pre-sarcopenia on gait spatio-temporal parameters. The 15<sup>th</sup> Annual Congress of Chinese Orthopaedic Association.
- [8] Liang Chen, **Ziang Jiang**, Liao Wang. Effect of different landing movements on knee biomechanics in female college athletes: a musculoskeletal dynamics-based simulation. The 15<sup>th</sup> Annual Congress of Chinese Orthopaedic Association.
- [9] Xiaohu Li, Xuelian Gu, **Ziang Jiang**, et al. Statistical modeling method on assessing the anatomical variability of knee joint space width. The 15<sup>th</sup> Annual Congress of Chinese Orthopaedic Association.
- [10] **Ziang Jiang**, Rongshan Cheng, Bo Yu, et al. Biomechanical Effect of 3d-printed Customized Short Stem Femoral Prosthesis in THA. 2022 National Joint Surgery Academic Conference. **Oral**. (*Chinese Conference*)
- [11] **Ziang Jiang**, Rongshan Cheng, Bo Yu, et al. The Stabilization Effect of Customized Short Femoral Stem implantation in Proximal Femur. **Poster**. 13th National Conference on Biomechanics. (*Chinese Conference*)
- [12] **Ziang Jiang**, Zhongzheng Wang, Tsung Yuan Tsai. A Radiation-Free Mandible Motion Capture Method Based on MRI Slice to Volume Registration. **Oral**. 13th National Conference on Biomechanics. (*Chinese Conference*)
- [13] Yufan Wang, Cong Wang, **Ziang Jiang**, et al. Influence of Anatomical Variation of Anterior Cruciate Ligament Insertion on the Dynamic Internal Force: Simulation of knee ligament model based on dynamic biplane X-ray tracing. **Oral**. 13<sup>th</sup> National Conference on Biomechanics. (*Chinese Conference*)
- [14] Rongshan Cheng, **Ziang Jiang**, Huizhi Wang, et al. Effect of Femoral Tunnel Angle Change on Graft Failure After Anterior Cruciate Ligament Reconstruction. **Poster**. 13<sup>th</sup> National Conference on Biomechanics. (*Chinese Conference*)



## Work Experience

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Research assistant in "SJTU" Orthopaedic Biomechanics Lab	Mar.- Jun. 2023
Research and development assistant in "Changzhou Youde Ai Medical Equipment Co."	Sep.2022- Mar. 2023
Research and development assistant in "TAO image Co."	Jan.- Dec. 2021
Teaching assistant in "SJTU" <Human Motion Modeling and Analysis> lesson	Jan.- Jun. 2021
Lecturer in "National Scholarship Winner" lecture team	Sep. 2019- Sep. 2020
Research and development assistant in "Shanghai Kinetic Medical Co."	Oct. 2019- Jul. 2020
Lecturer in "University of Shanghai for Science and Technology (USST)" "Outstanding Graduates" lecture team	Dec. 2018- Dec. 2019
Lecturer in "New Era, New China" lecture team	Oct. 2018- Oct. 2019
Online Lecturer in "USST" for university period planning and guidance	Jan. 2018- May. 2019



## Social Activities

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Guide volunteer in the West Bund Museum	Jan. 2022-May. 2023
Guide volunteer in the Long Museum	Dec. 2021-Mar. 2022
"WSET" Level 2 Intermediate Sommelier in Wine and Spirits	
"ESW" Level 2 Intermediate Sommelier in Wine and Spirits	
"SCA" Brewing Intermediate Barista	
2018 "Xinhua Hospital" Summer Volunteer Service	Jan.- Sep. 2018
"2018 Summer Cultural Exchange Program" translator for Chinese and American Students	Apr.-May. 2018
"2017 Chinese Language and Culture Exchange Program" translator for USST and California State University FRESNO students	Apr.-May. 2017