

Junior Research Mentoring Programme

Code:	JRMP2021_04
School / Department:	Department of Biomedical Engineering
Name of Research Leader:	Dr Wang Yan, Research Assistant Professor
Names of Team Members:	Prof. Zhang Ming & Mr Tommy T.H. Hong
Research Topic:	Biomechanical Study of Human Body Supports
Short Description of the Research Project:	The project will be conducted to understand human body movement and force transfer under different body supports such as special footwear, sitting cushion and sleeping support using motion capture system, force platform, wireless electromyography (EMG), foot pressure measurement system and self-developed device. The experimental data will be further analyzed using computational biomechanical models. The information can be used to understand the body support biomechanics and to design a better support device for normal persons, elderly or people with special needs.
No. of Places Offered:	20

* The information presented above is subject to change.

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Code:	JRMP2021_05
School / Department:	Department of Biomedical Engineering
Name of Research Leader:	Prof. Zheng Yong Ping, Chair Professor
Names of Team Members:	Dr Timothy Lee Tin Yan & Ms Kelly Ka-Lee Lai
Research Topic:	Evaluation of Spine Using Radiation-free Three-dimensional (3D) Ultrasound
Short Description of the Research Project:	<p>According to previous reports, there is about 5% of kids having scoliosis and some of them will get severe during adolescent stage. Severe scoliosis will require spinal surgery. Earlier diagnosis and continuous monitoring are very important for the management of scoliosis. Conventionally, X-ray imaging is used to assess spinal curvature and detect scoliosis. However, radiation exposure is still a big concern in patients with idiopathic scoliosis, especially to those who are undergoing growth spurt during their puberty. PolyU has recently developed a radiation-free 3D ultrasound imaging technique for scoliosis evaluation, Scolioscan, which can be used more frequently, even at school using its portable version. A customized three-dimensional ultrasound analysis software, Scoliostudio, can form 3D view for the spine for more comprehensive assessment for spinal curvatures.</p> <p>In this research project, participants will be able to:</p> <ol style="list-style-type: none"> 1) Gain more understanding about scoliosis and spine anatomy 2) Learn how to conduct free-hand scanning using the 3D ultrasound imaging system

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	<ol style="list-style-type: none">3) Understand the mechanism of this novel technology4) Work with the team to conduct research related to coliosis, including the normal spine profile among adolescents, and how spine grows into scoliosis and how it progresses5) Evaluate spinal curvature in 3D planes by generating customized 3D ultrasound images using the 3D software
No. of Places Offered:	2
Special Requirement(s):	Preferred subjects taken: Biology and Physics

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