

## Reliability estimation of human knee and hip implants

**Project Description:** In recent years, with the widespread application of human implants, their reliability estimation has become a frontier problem that needs to be solved urgently. This project is dedicated to developing statistical models to characterize the degradation of implants (e.g. human hip joints and knee joints). The tasks include experimental design, data collection, operations research model development, computer programming, etc. Our goal is to improve the accuracy of reliability prediction of human implants through these studies and lay the foundation for the widespread application of human joint implants and industry standards.

**Job Description:** We are looking for a scientific research assistant with a solid academic foundation, self-motivation, interest in medical engineering projects, and willingness to carry out research work. The ideal candidate should have a relevant background in statistics, operations research, etc., and be keen on working in the field of Medicine & Engineering Combination. Candidates will work on literature review, data collection, data processing and mathematical modeling. Candidates will collaborate with the PI and other team members on publishing academic papers in high-quality journals. Through the Focused Research Extension Program (FREE), candidates will have the opportunity to acquire the professional and practical skills required to carry out research work, thereby increasing the likelihood of being admitted to a doctoral or master's degree program and the chance of obtaining a long-term job in industry. The PI can recommend outstanding research assistants to study for a doctoral degree at well-known universities in the United States, Hong Kong and Mainland China.

This position commences in or after early 2024, with individuals anticipated to initiate their responsibilities no later than Spring 2024. The term of employment spans two years, and the contract is structured for annual renewal.

### Qualifications:

- Bachelor's degree or above in industrial engineering, operations research, statistics, applied mathematics, management and other related majors
- Able to independently derive probability and statistical formulas.
- Experience in mathematical modeling
- Proficient in using at least one of the following languages (MATLAB, Python, R).

For questions regarding this position, please contact Dr. Changxi Wang, at [changxi.wang@scu.edu.cn](mailto:changxi.wang@scu.edu.cn).