



In-vivo Tests for Personalized Biomechanical Simulations

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Computer models and simulations have been very successful in many engineering fields. However, the methods that work for designing planes or bridges usually don't directly work to model biological tissues. Extending the success of computational mechanics to biomedical sciences and medicine is a challenge, but could bring important benefits to physicians and patients. Computational models enable a deeper understanding of the biomechanical parameters responsible for certain pathologies, could lead to improved treatment and implant design as well as better surgical planning. One of the key aspect to achieve realistic predictions is to derive an accurate biomechanical description of the patients' tissues. In this context, the objective of this presentation is to show the work that we conducted over the past years towards in-vivo quantification of the tissue biomechanics and patient-specific modeling in different medical fields such as otology, ophthalmology, or orthopedics.