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TMJSIM - AID SIMULATOR AT DIAGNOSIS, PRE-SURGICAL PLANNING AND MONITORING OF BUCOMAXILOFACIAL TREATMENT

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Medical simulators have been helping to teach therapeutic and diagnostic procedures as well as the representation of medical concepts and in the process of decision of health professionals. Use of jaw motion simulators in dentistry, education, orthodontic adjustment of occlusions, or in the pre-operative planning of craniofacial surgery can be extremely useful, improving diagnosis and postoperative treatment. This article presents TMJsim, a simulator of mandibular motion constructed from real data coming from Computed Tomography and Magnetic Resonance images. A virtual joint model which composes the simulator receives points captured from the lower incisor point motion. Contribution of each muscle in temporomandibular movement is approached from the Hill actuators model and the concept of curves of insertion. Virtual Articulator is replacing mechanical articulators currently used with many advantages: more accurate simulation of motion, inclusion of new parameters such as muscle strength and it shows graphics for motion curve analysis.

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MEDICAL INFORMATICS IN THE ERA OF TRENDY DATA DISCIPLINES

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Historically, medical/health informatics have emerged from the desire to use digital resources in order to make healthcare systems more efficient and to make improvements to the health of individuals and of the population. Many industries, including health, have seen huge increases in the volume and variety of data available to them in recent years. In response, new disciplines have arisen to take full advantage of these new data resources. While there is a partial overlap between the scope of medical informatics and trendy disciplines such as big data, data mining, data science, and machine learning, it is natural to ask where medical informatics stands in this era. In this talk, we review the distinctive roles that each data discipline has played in current accomplishments in medical informatics. As the increase in magnitude and richness of health data often translates to evolving needs, we discuss the need to develop smarter tools that make full use of the health-related data. We also outline what the next chapter of innovations should contain for data disciplines to thrive as medical informatics application domain grows.

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