

Title: ARTHUR-3D Dentofacial Surgery Full Planning

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Abstract:
Facial expression facilitates the understanding of the individual's identity, being essential for communication and interaction in modern society. When this expression is limited, in addition to the functional consequences of the organism, it also has psychological and social consequences. The ARTHUR project developed a virtual surgery solution, applied to the bone and dental structure, capable of predicting the real impact on the patient's face mask. The solution is based on cloud and allows the clinical body to perform the virtual surgical planning, using cutting guides and plates or surgical guide lines, in a parameterized anatomical model of the head achieved through the fusion of three exams: TAC (CBCT), Intraoral Scan and 3D Stereo Photogrammetry. Above all, it is intended that, based on this planning and thanks to the parameterized anatomical model, it is possible to realistically forecast and represent the impact of the surgical intervention on the patient's face mask. This tool acts in different situations that require facial reconstruction, however this project focuses specifically on two types of use cases: bone congenital disfigurement and acquired disfiguration such as oral cancer with bone attainment.

It is intended to be an intuitive and user friendly tool, which allows its use by less specialized technicians who can demonstrate the final results directly to the patient in the office. Able to predict visual impact with high realism and degree trust, will enable patients to participate more actively in the decision-making process therapy.

Biography
Miguel Oliveira has completed his PhD in 2010 from University of Aveiro and is a researcher in software development for several areas like medical emergency, culture and business solutions. He is the director of Software Development professional higher technical course, a short cycle higher education course. He has published more than 30 papers in reputed journals and has been serving as a reviewer member in several technical conferences like IEEE. He also lectures in Product and Digital Technology MSc and Production Systems Technology and Design and Product Technology undergraduate courses.

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