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PARAMETERIZATION OF DENTAL GEOMETRIC FEATURES FOR INDIVIDUAL IDENTIFICATION USING THE "BIOMETRIC ROSETTE" CONCEPT

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The utilization of dental geometric features for individual identification could bring significant progress with the introduction of the "biometric rosette" concept. This research aims to parameterize the distinctive dental features using advanced virtual engineering methods to enhance the accuracy and reliability of forensic odontology and biometric identification systems. The study introduces approach to measuring and parameterizing dental geometric features, focusing on the creation of the biometric rosette. The research was conducted on real scans of human dentition, which were later analyzed as a 3D structure. The resulting 3D models serve as the basis for extracting and encoding geometric parameters that uniquely characterize an individual's dentition. Key steps in the research include the development of algorithms for the precise measurement of dental features, the establishment of a universal reference framework, and the definition of descriptor parameters for the biometric rosette. These parameters can encompass for example shape, size, and positional attributes of teeth, which are critical for individual identification. This parameterization framework aims to establish a universal and durable method for recording dental features that can be applied in forensic contexts. By defining and encoding these parameters, the biometric rosette provides a structured and repeatable approach to dental identification. The research emphasizes the importance of creating a robust data acquisition standard and a universally applicable reference framework. The anticipated outcome of this research is a validated parameterization system that can serve as a foundation for further studies and practical applications in forensic odontology. The biometric rosette concept holds potential for improving the accuracy and reliability of dental identification methods, contributing significantly to the field. Future research will focus on refining the parameterization process and expanding the sample size to further validate the method's effectiveness.