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Forensic Facial Approximation of 5000-Year-Old Female Skull from Shell Midden in Guar Kepah, Malaysia

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Abstract

Forensic facial approximation was applied to a 5000-year-old female skull from a shell midden in Guar Kepah, Malaysia. The skull was scanned using a computed tomography (CT) scanner in the Radiology Department of the Hospital Universiti Sains Malaysia using a Light Speed Plus scanner with a 1 mm section thickness in spiral mode and a 512 × 512 matrix. The resulting images were stored in Digital

Imaging and Communications in Medicine (DICOM) format. A three-dimensional (3D) model of the skull was obtained from the CT scan data using Blender's 3D modelling and animation software. After the skull was reconstructed, it was placed on the Frankfurt plane, and soft tissue thickness markers were placed based on 34 Malay CT scan data of the nose and lips. The technique based on facial approximation by data extracted from facial measurements of living individuals showed greater anatomical coherence when combined with anatomical deformation. The facial approximation in this study will pave the way towards understanding face prediction based on skull structures, soft tissue prediction rules, and soft tissue thickness descriptors. © 2022 by the authors.

Author keywords

3D modelling; computed tomography; face prediction; facial reconstruction; forensic facial approximation; skull reconstruction

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