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Facial Muscle Anatomy Based Approach for Forensic Facial Reconstruction in Sri Lanka

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Objective: This process of forensic facial reconstruction is still at its infancy in Sri Lanka and is yet to utilize the advanced technologies of other countries. Hence introducing a more efficient, semi-automated 3D Computer graphics based technique to the local forensic officials is the aim of this study.

Method: The process involves capturing a 3D model of the skull and digitally sculpting facial muscles on the model with the aid of forensic facial markers. Separate analyses were also conducted for both facial tissue thickness and facial component variations in Sri Lankans to achieve an improved result. This procedure was adopted on cases of the age category 20-30 years/ medium weight.

Results: The facial tissue thickness analysis conducted by the research team confirmed that tissue thickness data of other countries cannot be adopted in the local context. It was observed that Sri Lankans have a different facial soft tissue thickness mainly in the following areas; Gonion, Sub M2, Supra M2 and the area beneath the chin. The facial feature analysis discovered the most common nasal and eye indexes which were then modeled in to the final output. In most of the user surveys, more than 50% of the respondents were able to identify the deceased person by means of the reconstructed model and the feedback was satisfactory.

Conclusion: Based on the cost analysis and the results of the evaluations, adopting the suggested novel application and establishing the first unit for facial reconstruction in Sri Lanka would be highly recommendable.