



Surfaces, shapes and anatomy

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Three-dimensional surface imaging, through laser-scanning or stereophotogrammetry, provides high-resolution data defining the surface shape of objects. In an anatomical setting this can provide invaluable quantitative information, for example on the success of surgery. Two particular applications are in the success of facial surgery and in developmental issues with associated facial shapes. An initial challenge is to extract suitable information from these images, to characterise the surface shape in an informative manner. Landmarks are traditionally used to good effect but these clearly do not adequately represent the very much richer information present in each digitised images. Curves with clear anatomical meaning provide a good compromise between informative representations of shape and simplicity of structure, as well as providing guiding information for full surface representations. Some of the issues involved in analysing data of this type will be discussed and illustrated. Modelling issues include the measurement of asymmetry and longitudinal patterns of growth.