Morphometric Skull Analysis Using Jointed Chains of Rigid Bodies

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**Morphometric Skull Analysis Using Jointed Chains of Rigid Bodies**

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**Research objectives:** This work investigates two morphometric problems by applying the theory of shape-changing rigid-body mechanisms. The advantage of approaching morphometrics in this way is that a modest number of physical parameters describes the changes between the curves.

**Morphometric skull analysis**  
Morphometrics seeks to quantify shapes for the purposes of comparison. Two morphometric problems are investigated. The first problem is the analysis of a head growth in children. The second problem is the spatiotemporal evolution of the longitudinal human skull shape. These problems are specified with a set of curves that represent the cranium shapes as they change over time, in the child’s head as it grows and in the skull as it evolves.

**Rigid-body shape-changing mechanisms**  
A typical shape-change problem seeks a device that approximates a set of specified shapes with the edge geometries of some of its components.

**Results**  
Design methodology

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Cranium growth of a child  
Skulls of  

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