Craniofacial growth models: from Delaire's cephalometrics to geometric morphometrics

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Mathematical modelling helps to describe craniofacial growth, to study the interaction of growth processes with clinical and environmental factors, and to build tools for prediction and diagnosis. These models are based on clinical data and include various degrees of geometric information: cephalometric approaches – using traditional or geometric morphometrics – tend to describe shape modifications using distances, angles, or deformations, while deep learning approaches only rely on raw data. In the near future, clinically relevant growth models that may be used for diagnosis and prediction will result from the combination of geometric methods deriving from the works of Jean Delaire with methods related to the field of artificial intelligence.