PhD in Management, Production and Design

Research Title: 3D Human Body Morphometric Analysis

Funded by	DIGEP

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Context of the research activity	In recent years, different sectors have focused their attention to issues related to 3D acquisition, simulation modelling and visualization. The considerable potential that three-dimensional models are able to provide has greatly stimulated experimental studies in this direction. Different clinical settings (maxillofacial, orthopaedic, dental,...) have seen the emergence of several experiments aimed at the development of methodologies and three-dimensional acquisition tools which could provide the user with three-dimensional morphologically and clinically significant models. Also, the need of security in face recognition applications such as geographical borders and identification of subjects during bank transfer operations requires accurate methods and addresses research for this task. Product development domain is moving also in the identification of innovative methodologies and tools for supporting new smarter user needs identification and analysis, based on 3D facial expression analysis, with the main goal of supporting product innovation making it more suitable and flexible to costumers needs, according to its employment in different usage scenarios.

Objectives	Thus, a progress in the tools towards 3D has been successfully performed, but protocols of usage are still missing. Thus, this research proposal will try to bridge this gap with particular attention to the development of suitable three-dimensional formalization strategies, by the usage of blended approaches involving geometrical and neural networks strategies for providing more reliable and flexible biometric solutions. These aspects will be studied with the support of the "3D Modeling and Simulation Laboratory", situated in Department DIGEP of "Politecnico di Torino".

Skills and competencies for the development of the activity	Master's degree preferably in Computer Science Engineering. The candidate should have a good knowledge of 3D acquisition, methods and techniques and neural networks.