Traditional Photogrammetry with Low Cost Scanners for Anthropometry

Pablo Davila, Esteban Carrera, and Oswaldo Jara

Universidad Internacional SEK
Quito, Ecuador

Corresponding author's Email: pablo.davila@uisek.edu.ec, esteban.carrera@uisek.edu.ec, oswaldo.jara@uisek.edu.ec,

Abstract: Photogrammetry is the art, science and technology for obtaining reliable measurements of physical objects and their environment, through recording, measuring and interpreting images and patterns of radiant electromagnetic energy and other phenomena (American Society of Photogrammetry and Remote Sensing - ASPRS).
In other words, the technique of studying, and defining precisely the shape, dimensions and positions of objects that have been captured in images.

Photogrammetry began around 1850 and has gone through different stages such as: analog photogrammetry (1850-1875), analytical (1880-1860) and digital (1970 onwards). Nowadays, with the technological development, the BIO-FOTOGRAMETRIA was developed, which is nothing else than the study and precise definition of the forms, dimensions and positions of living beings (animated). For this type of studies, high precision equipment has been developed that demands resources and technological applications, which, being state of the art, present high costs in the market (from USD 150,000 to USD 5,000).

The 3D scanners, for the capture of the images of the human body use active sensors (laser, radar, ultrasound, etc.) and passive (B / W, color and infrared photographs), its objective is to capture the images in the less time possible, and facilitate the digital processing of them and that the movement of people does not generate errors in the construction of the 3D model and therefore in the process.

In the search to overcome the problem of the movement of people, scanners with redundant sensors have been designed to capture images (high resolution-300 points per cm2) and short acquisition and storage times (1200 images / second), to achieve this low costs have been developed applications that integrate pre-existing elements in local markets, so that in our case has been implemented a scanner whose cost varies between 300 USD (if you already have a computer in advance) and 1000 USD (if you require buy the computer).

Keywords: scanner, low cost, bio-Photogrammetry