

## **Abstract**

The purpose of this work is to create an algorithm for automatic cleaning and trimming of three-dimensional facial scans. In view of that, we have developed an algorithm which consists of three central parts. The first part is a novel landmark detection algorithm based on discrete differential geometry and machine learning methods. The second part is represented by a method removing defects, spikes, and blobs and the last part is an enhancement of an algorithm for hole filling. The outcome of this work is a program which can automatically clean and trim three-dimensional facial scans and moreover, it can detect nose tip, nose root, and mouth and eye corners. As our testing has shown, the program performs well on facial scans produced by the optical scanner Vectra3D.