

# Cleft Lip Aesthetics Tool

A cross platform app that allows the success of a cleft palate surgery to be determined through symmetry

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## Abstract

The project is about determining the success of cleft lip and palate surgeries. Through the use of a mobile app, paediatric plastic surgeons should be able to evaluate the aesthetic outcome of the surgery by determining how symmetrical the lips are. The user should be able to draw around the lip region of the target image and then receive a symmetry score, determining the successfulness of the surgery. This would replace the previous, subjective method of having a panel of people determine success. Having the app be multiplatform would be ideal which meant PhoneGap was used for development. There should also be offline functionality which means the app will be synced to an online server to allow data to be transferred as required.

The app was developed with PhoneGap to allow multiplatform functionality to be implemented quicker. The user interface was developed with focus on ease of access. Once all the pages were set up, the app was linked to a server which allow downloading and uploading of drawings and images to the online database. The drawing feature was then implemented and ImageJ was used to produce a symmetry score based off the drawing.

The goals of the project have successfully been reached which means a multiplatform app with offline features has been produced which allows users to create a drawing based off a patient's drawings and receive a symmetry score. These drawings can be uploaded to the cloud for future analytical work by researchers to allow further improvements to the app. A user manual was produced to demonstrate the app's features in a simple manner. A system manual has also been produced regarding the app code to assist in further development.

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## 1. Introduction

### 1.1. Problem

Children born with a cleft lip and palate often have surgery at a young age to fix the problems associated with the condition. One of the improvements on the patient, post-surgery would be the aesthetic improvement to the lip region. To determine the success of this procedure, a panel is used to determine how aesthetic the post-operation lip region is. This is quite subjective and requires multiple people which is inefficient. This project aims to develop an app that can use symmetry to determine the success of a surgery to replace the current method being used. This would save a lot of time and provide faster and more accurate results once surgery has been completed.

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### 1.4. Report overview

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