

A Project Report
On
**DETECTING AND COUNTING THE BACTERIAL COLONIES USING IMAGE
PROCESSING APPROACH**

Submitted to



**VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELGAUM, KARNATAKA- 590014**

In partial fulfilment of the completion of Eighth semester

Bachelor of Engineering

in

Information Science and Engineering

By

ASHWITHA R. SALIAN	4AL17IS010
DANUSH KUMAR	4AL17IS012
PAVAN Y. N.	4AL17IS033
PRASHANTH REDDY	4AL17IS034

Under the guidance of

Dr. Kiran B. Malagi

Associate Professor

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING



**ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY, MIJAR, MOODBIDRI
D.K -574225**

2020-21

ALVA'S INSTITUTE OF ENGINEERING AND TECHNOLOGY

MIJAR, MOODBIDRI D.K. -574225

KARNATAKA



DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

CERTIFICATE

This is to certify that the project entitled "**Detecting and Counting the Bacterial Colonies Using Image Processing Approach**" has been successfully completed by

ASHWITHA R. SALIAN

4AL17IS010

DANUSH KUMAR

4AL17IS012

PAVAN Y. N.

4AL17IS033

PRASHANTH REDDY

4AL17IS034

the bonafide students OF DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING, Alva's Institute of Engineering and Technology, Moodbidri affiliated to VISVESVARAYA TECHNOLOGICAL UNIVERSITY, BELAGAVI during the academic year 2020-21. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed in partial fulfillment of awarding Bachelor of Engineering degree.

Handwritten signature of Dr. Kiran B. Malagi in black ink.

Dr. Kiran B. Malagi
Associate Professor
Project Guide

Handwritten signature of Prof. Sudheer Shetty in black ink.

Prof. Sudheer Shetty
Associate Professor
HOD, ISE.

Dept. Of Information Science & Engineering
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225

Handwritten signature of Dr. Peter Fernandes in black ink.

Dr. Peter Fernandes
PRINCIPAL
Principal
Alva's Institute of Engg. & Technology
Mijar, MOODBIDRI - 574 225, D.K

Name of the Examiners

1. Dr. Kiran B. Malagi
2. Mr. Nagesh U.B

Signature with Date

Handwritten signature of an examiner in blue ink.

ABSTRACT

The counting of microbial colonies is important due to its applications in the field of medical microbiology. To search or detect the causes of diseases it is important to quantify the amount of bacteria present. While different tasks are performed, the counting process is done either manually or by a common software available. The manual counting of bacteria colonies is tiresome, eye-straining, and time consuming and difficult even for well-trained technicians since there might exist hundreds or thousands of colonies on a Petri dish, it is difficult to get the result quickly and accurately.

Fully automated and high throughput hardware imaging instruments are also available but they are highly expensive and not affordable by most of the labs. Also there are some android application available but tends to have high error rate. The aim of this study is detecting and counting bacteria colonies without having these limitations. Here an image processing approach is used to count the number of microbial colonies in the sample. The whole process includes detecting dish/plate region identifying colonies, separating aggregated colonies and finally reporting consistent and accurate counting results. The proposed system is using an edge detection technique where it takes an image as input and produce the colony count as output.