# DESIGN AND IMPLEMENTATION OF FACE RECOGNITION USING OPENCV

*This project report is submitted to*
*Rashtrasant Tukadoji Maharaj Nagpur University*
*in the partial fulfilment of the requirement for the award of the degree*
*of*

**Bachelor of Engineering in Computer Technology**

*by*

**Mr. Aneesh Nedunoori (CT19019)**
**Mr. Hardik Durge (CT19021)**
**Mr. Chaitanya Choudhary (CT19025)**
**Mr. Jay Karemore (CT19027)**
**Mr. Tushar Sharma (CT19081)**

*Under the guidance of*

**Mr. Bhushan Deshpande**
Assistant Professor


**2021-2022**

**DEPARTMENT OF COMPUTER TECHNOLOGY**
**KAVIKULGURU INSTITUTE OF TECHNOLOGY AND SCIENCE**
**RAMTEK – 441 106**

**DEPARTMENT OF COMPUTER TECHNOLOGY**
**KAVIKULGURU INSTITUTE OF TECHNOLOGY AND SCIENCE**
**RAMTEK – 441 106**


# CERTIFICATE

This is to certify that the project report entitled **'Design and Implementation of Face Recognition using OpenCV'** carried out by Mr. Aneesh Nedunoori (CT19019), Mr. Hardik Durge (CT19021), Mr. Chaitanya Choudhary (CT19025), Mr. Jay Karemore (CT19027), Mr. Tushar Sharma (CT19081) of the B.E. third year of Computer Technology, during the academic year 2021-2022, in the partial fulfilment of the requirement for the award of the degree of **Bachelor of Engineering (Computer Technology)** offered by the **Rashtrasant Tukadoji Maharaj Nagpur University,** Nagpur.

Mr. Bhushan Deshpande
**Guide**

Dr. Vilas P. Mahatme
**Head of the Department**

Dr. Avinash N. Shrikhande
**Principal**

Date:
Place: Ramtek

# DECLARATION

We declare that

a. The work contained in this project has been done by us under the supervision of our guide.

b. The work has not been submitted to any other Institute for any degree or diploma.

c. We have followed the guidelines provided by the Institute in preparing the report.

d. We have conformed to the norms and guidelines given in the Ethical Code of Conduct of the Institute.

e. Whenever we have used material (data, theoretical analysis, figures, and text) from other sources, we have given due credit to them by citing them in the textof the report and giving their details in the references. Further, we have taken permission from the copyright owners of the sources, whenever necessary.

**Project-mates**

# ACKNOWLEDGEMENT

We are grateful to our guide **Mr. Bhushan Deshpande** for his kind, disciplined, invaluable guidance which inspired us to solve all the difficulties that came across during completion of project.

We express our special thanks to **Dr. Vilas P. Mahatme,** Head of the Department, for his kind support, valuable suggestions and allowing us to use all facilities that are available in the Department during this project.

Our sincere thanks are due to **Dr. Avinash N. Shrikhande**, Principal, for extending all the possible help and allowing us to use all resources that are available in the Institute.

We are also thankful to our **Family** members and **Friends** for their valuable co-operation and standing with us in all difficult conditions.

**Project-mates**

# ABSTRACT

As one of the most successful applications of image analysis and understanding, face recognition has recently received significant attention, especially during the past few years. Facial recognition technology (FRT) has emerged as an attractive solution to address many contemporary needs for identification and verification of identity claims. It brings together the promise of other biometric systems, which attempt to tie identity to individually distinctive features of the body, and the more familiar functionality of visual surveillance systems. This report develops a socio-political analysis that bridges the technical and social scientific literature on FRT and addresses the unique challenges and concerns that attend its development, evaluation, and specific operational uses, contests, and goals.

It highlights the potential and limitations of the technology, noting those tasks for which it seems ready for deployment, those areas where performance obstacles may be overcome by future technological developments or sound operating procedures, and still other issues that appear intractable. Its concern with efficacy extends to ethical considerations. Face recognition technology may solve this problem since a face is undeniably connected to its owner except in the case of identical twins. It's non-transferable. The system can then compare scans to records stored in a central or local database or ever on a smart card.

**Keywords:** face recognition, python, OpenCV, deep learning, faces.

# CONTENTS

# ABBREVIATIONS

| Abbreviations | Meaning |
|---|---|
| IDE | Integrated Development Environment |
| DNN | Deep Neural Network |
| CNN | Convolutional Neural Network |
| OS | Operating System |
| DFD | Data Flow Diagram |

# LIST OF FIGURES

# LIST OF TABLES