# Image Dehazing using Convolutional Neural Networks (CNN)

**A PROJECT REPORT**

*Submitted by,*


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*Under the guidance of,*

**Dr.Taranath N.L**

*in partial fulfillment for the award of the degree of*

**BACHELOR OF TECHNOLOGY**

**IN**

**COMPUTER SCIENCE AND ENGINEERING**

**At**

GAIN MORE KNOWLEDGE
REACH GREATER HEIGHTS

**PRESIDENCY UNIVERSITY**

**BENGALURU**

**MAY 2025**

# PRESIDENCY UNIVERSITY

## SCHOOL OF COMPUTER SCIENCE ENGINEERING

## CERTIFICATE

This is to certify that the Project report **"Image Dehazing using Convolutional Neural Networks (CNN)"** being submitted by **"ROHAN G, ANJAN K S, JAYANTH D , S KUSHAL"** bearing roll number(s) **"20211CSE0233, 20211CSE0219, 20211CSE0246, 20211CSE0336"** in partial fulfillment of the requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering is a bonafide work carried out under my supervision.

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## DECLARATION

We hereby declare that the work, which is being presented in the project report entitled **Image Dehazing using Convolutional Neural Networks (CNN)** in partial fulfillment for the award of Degree of **Bachelor of Technology** in **Computer Science and Engineering**, is a record of our own investigations carried under the guidance of **Dr.Taranath N.L, Associate Professor, School of Computer Science Engineering & Information Science, Presidency University, Bengaluru.**

We have not submitted the matter presented in this report anywhere for the award of any other Degree.

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## ABSTRACT

Unclear visuals resulting from environmental factors like fog, smoke, and pollution greatly impact the clarity and effectiveness of visual data in various practical uses. These circumstances result in diminished visibility and color distortion, consequently impairing the effectiveness of computer vision systems utilized in fields such as autonomous driving, surveillance, and outdoor photography.

Image dehazing proves to be a crucial initial step that effectively enhances images and recovers missing details as well. This project demonstrates a method for employing deep learning, particularly Convolutional Neural Networks (abbreviated as CNNs), to restore clarity to hazy images. While conventional techniques often rely on fixed patterns or assumptions regarding the variations of fog or haze, CNNs excel at directly learning various details from the available data. They independently find that information without anyone instructing them on what to search for.

In this project, we implemented a model that learns from pairs of images that appear smoky, hazy and sharply clear. It employs numerous layers of convolutions and transpose convolutions, along with various ReLU activation functions, to convert blurred input images into sharp, clear visuals. We've created a fantastic interface that is very simple to navigate with Gradio. We are transforming this system into an engaging platform that many can enjoy and interact with.

Users can submit unclear images directly into the application, and the model functions rapidly to produce a picture that is free of any blur. Collaborating effortlessly, the integration of CNN models with Gradio user interfaces provides an exceptionally smooth final experience. Experimental findings show that the system successfully enhances the visual quality of hazy images.

The model retains the essential attributes, reflects the natural hues, and significantly enhances the contrast. And it operates incredibly quickly as well, which truly excels for live applications.

## ACKNOWLEDGEMENT

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