

# **NUMERICAL ANALYSIS OF HELICAL GEAR MESH AND MODELLING**

*A Project report submitted towards partial fulfillment of  
the requirements for the degree of*

**BACHELOR OF TECHNOLOGY  
IN  
MECHANICAL ENGINEERING**

*Submitted By*  
**ARIJIT DAS (1601105367)**

*Under the guidance of*  
**MR. GAURAB GHOSH,  
ASST. PROFESSOR**



**DEPARTMENT OF MECHANICAL ENGINEERING,**

**INDIRA GANDHI INSTITUTE OF TECHNOLOGY,  
SARANG, DHENKANAL - 759146**

**A Project Report on**  
**Adaptive Thresholding based Canny Edge**  
**Detector for Gray Scale Images**



**SUBMITTED BY**

**ALAKA PRADHAN**  
**Regd.no. 1807105009**

**UNDER THE GUIDANCE OF**

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**DHENKANAL-759146**  
**2019-2020**

DEPARTMENT OF  
ELECTRONICS AND TELECOMMUNICATION ENGINEERING



**CERTIFICATE**

This is to certify that the thesis entitled “**Adaptive Thresholding Based Canny Edge Detector for Gray Scale Images**” submitted by Alaka Pradhan bearing registration no. 1807105009 to Indra Gandhi Institute of Technology, Sarang as a partial fulfillment for the Degree of Master of Technology in Electronics and Telecommunication Engineering is a bonafide research work carried out in the Department of Electronics and Telecommunication Engineering under the guidance of Mr. Dillip Dash, Assistant Professor.

Project Guide

External

Head of the Department

## **ACKNOWLEDGEMENT**

I would like to express my sincere thanks to my guide Mr.Dillip Dash, ETC department, for his vital support, valuable guidance and for providing me all facility and guidance for presenting assisting me in times of need.

I would also take this opportunity to express my heartfelt gratitude to Professor URMILA BHANJA, Head of the Department of Electronics And Telecommunication Engineering, for her valuable support and cooperation in the presentation of this paper. I would also thankful to our friends for their lively discussions and suggestions. Finally we would like to thank the almighty who have given me all that is required for the successful completion of my project.

## **Declaration**

I hereby declare that the thesis titled “**Adaptive Thresholding Based Canny Edge Detector for Gray Scale Images**” is a bonafide research work carried out by me for the partial fulfillment for the Degree of Master of Technology under the guidance of Mr. Dillip Dash, Asst. Professor in the department of Electronics and Tele Communication Engineering.

A handwritten signature in black ink that reads "Alaka Pradhan". The signature is written in a cursive style with a large initial 'A'.

**Name: Alaka Pradhan**  
**Regd. No: 1807105009**



## **CERTIFICATE**

This is to be certified that the work presented in this dissertation entitled **“Development and Characterization of Novel Chitosan-PVA-Red Mud Composite membrane for PEMFC applications at Low Temperature”** has been submitted by the Master of Technology in Chemical Engineering of **INDIRA GANDHI INSTITUTE OF TECHNOLOGY, SARANG** during the academic year 2019-2020 is a persuasive piece of project work carried out by **Sarat Chandra Patra (1807105088)** towards the partial fulfilment for award of the degree (**M-Tech**) under the guidance of **“Dr. Harekrushna Sutar, Assistant Professor, IGIT, Sarang”**. Neither this dissertation nor any part of it has been submitted earlier for any degree or diploma to any institute or university in India or abroad.

**Date: 25 June, 2020**

**Place: Sarang**

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### **Thesis Supervisor**

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**CERTIFICATE**

This is to certify that the thesis entitled “**Design and implementation of 128-bit data security algorithm using steganography and cryptography techniques with message integrity test written in VHDL code**” submitted by Gyanaranjan Samal bearing registration no. 1807105032 to Indra Gandhi Institute of Technology, Sarang as a partial fulfilment for the award Degree of Master of Technology in Electronics and Telecommunication Engineering (specialization in Electronics and Telecommunication Engineering) is a bonafide research work carried out in the Department of Electronics and Telecommunication Engineering under the guidance of Mr. Paresh Kumar Pasayat, Assistant Professor.

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**CERTIFICATE**

This is to certify that the thesis entitled "STOCK MARKET PREDICTION USING ARTIFICIAL NEURAL TECHNIQUE ON FINANCIAL DATASETS" submitted by Madhusmita Moharana bearing registration no. 1807105046 to Indira Gandhi Institute of Technology, Sarang as a partial fulfillment for the Degree of Master of Technology in Electronics and Telecommunication Engineering is a bonafide research work carried out in the Department of Electronics and Telecommunication Engineering under the guidance of Asst. Prof. Ms. Monalisa Nayak.

M. Monalisa Nayak  
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Department of Electronics Engineering  
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## CERTIFICATE

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This is to certify that the major project entitled “**Channel Estimation Using Artificial Neural Network**” submitted by Swagatika Palo, Regd. No. 1807105122, Department of Electronics Engineering, Indira Gandhi Institute of Technology, Sarang; for partial fulfillment of the requirements for the degree of **Master of Technology in Electronics Engineering** with specialization in “**Electronics & Telecommunication**”; is a bonafide record of the work carried out by her under our supervision and guidance.

Dr. (Mrs.) Urmila Bhanja

( Head of the Department )

Dr. Debajyoti Mishra

( Project Guide )

**PERFORMANCE OF FREE SPACE OPTICAL  
COMMUNICATION AND OPTICAL WIRELESS  
COMMUNICATION UNDER GAMMA-GAMMA  
CHANNEL**

A thesis submitted in partial fulfillment of the requirements for the award of the  
degree of

**MASTER OF TECHNOLOGY**

**IN**

**ELECTRONICS AND TELECOMMUNICATION  
ENGINEERING**

**Submitted By**

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**2018-2020**