



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING,
SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled **CONTINUOUS VEHICLE SPEED MONITORING SYSTEM** submitted by Ananthu S (SCT19EC033), Aswin M (SCT19EC042), Aswin M Thampy (SCT19EC043) and Gokul V S (SCT19EC060), in partial fulfilment for the award of the degree of Bachelor of Technology in **Electronics and Communication Engineering** of APJ Abdul Kalam Technological University, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Sajith Sethu P.
Associate Professor,
Dept. of ECE,
SCTCE
Project Co-ordinator

Mr. Paul K Thomas
Industry Expert
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External Project Guide

Prof. Salim Paul
Associate Professor,
Dept. of ECE,
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Dr. Nisha Jose K.
Head of the Department,
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Thiruvananthapuram
May, 2023



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SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled **DESIGN AND DEVELOPMENT OF NOISE CANCELLATION ALGORITHM FOR HEARING AIDS** submitted by **ABINAND N P (SCT19EC009)**, **ADVAITH S ANIL (SCT19EC017)** and **ANOOPKRISHNA A J (LSCT19EC124)**, in partial fulfilment for the award of the degree of Bachelor of Technology in **Electronics and Communication Engineering** of **APJ Abdul Kalam Technological University**, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Prof. Sajith Sethu P.
Associate Professor,
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Sri. Gopan George
Scientist-E, C-DAC
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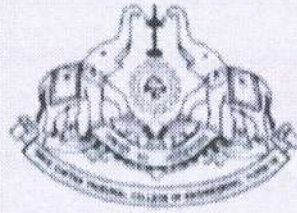
Prof. Sandhya L.
Associate Professor,
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May 2023



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THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled "SELF PROTECTION OF AMPLIFIER ECU FROM OVERHEATING BY AUTOMATIC GAIN CONTROL" submitted by AISWARYA BIJU (SCT19EC019), AKSHARA JAYAN (SCT19EC023), DENNIS JOSE (SCT19EC050), GAUTHAM A NAIR (SCT19EC054), in partial fulfilment for the award of the degree of Bachelor of Technology in **Electronics and Communication Engineering** of APJ Abdul Kalam **Technological University**, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Sajith Sethu P.
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SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled **DEEP LEARNING BASED LANGUAGE IDENTIFICATION SYSTEM** submitted by **Abhishek IS (SCT19EC008)**, **Adarsh Vijay KJ (SCT19EC012)**, **Akash JS (SCT19EC022)**, in partial fulfilment for the award of the degree of Bachelor of Technology in **Electronics and Communication Engineering** of **APJ Abdul Kalam Technological University**, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Sajith Sethu P.
Associate Professor,
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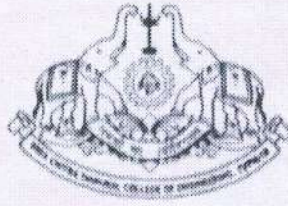
Thiruvananthapuram
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Prof. Salim Paul
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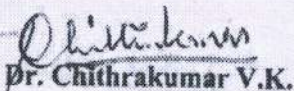
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled "DESIGN AND INTEGRATION OF VEHICLE CONTROL SYSTEM IN ELECTRIC AUTO RICKSHAW" submitted by ABHINAV SIVA S (SCT19EC005), ADARSH S KUMAR (SCT19EC011), ANANDA KRISHNAN A (SCT19EC032) and BHAVYA K R (SCT19EC048), in partial fulfilment for the award of the degree of Bachelor of Technology in Electronics and Communication Engineering of APJ Abdul Kalam Technological University, is a bonafide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.


Sajith Sethu P.

Associate Professor,
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Dr. Chithrakumar V.K.

Associate Professor,
Dept. of ME,
SCTCE
Project Co-Guide


Deepa A.K.

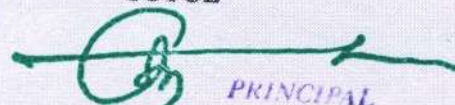
Associate Professor,
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Dr. Nisha Jose K.

Head of the Department,
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THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled **BI-CIRCULAR MICROSTRIP PATCH ANTENNA FOR 5G COMMUNICATION** submitted by ANZAR HUSSAIN(SCT19EC037), ASWIN J. B(SCT19EC041), A VISHNU MADHAV(SCT19EC045) and ADITHYA S KUMAR(SCT18EC005) in partial fulfilment for the award of the degree of Bachelor of Technology in Electronics and Communication Engineering of APJ Abdul Kalam Technological University, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Prof. Sajith Sethu P.
Project Co-ordinator
Associate Professor,
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Prof. Sandhya L.
Project Guide
Associate Professor,
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Dr. Nisha Jose K
Head Of Department
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SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
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CERTIFICATE

This is to certify that the project report entitled SAR ADC WITH WIDE INPUT DYNAMIC RANGE submitted by AISHWARYA P NAIR (SCT19EC018), AISWARYA SASIDHARAN S (SCT19EC020), AKSHAY UV (SCT19EC026) and AMRUTHA AL (SCT19EC030), in partial fulfilment for the award of the degree of Bachelor of Technology in Electronics and Communication Engineering of APJ Abdul Kalam Technological University, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Sajith Sethu P.
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THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled "LOW POWER, LOW VOLTAGE DLDO" submitted by Akshay A (SCT19EC024), Gayathri Krishna (SCT19EC055), Greeshma S M (SCT19EC063), Bincy S (LSCT19EC126), in partial fulfillment for the award of Bachelor of Technology in ELECTRONICS AND COMMUNICATION ENGINEERING from APJ Abdul Kalam Technological University. . is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma

Prof. Sajith Sethu P.
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CERTIFICATE

This is to certify that the project report entitled **HEXAPOD ROBOT** submitted by **AAHLADHA HARILAL (SCT19EC001), ABHISHEK K (SCT19EC007), ADITYAN SIVAPRASAD (SCT19EC015) and DEVIKA THAMPI (SCT19EC053)**, in partial fulfilment for the award of the degree of Bachelor of Technology in **Electronics and Communication Engineering** of **APJ Abdul Kalam Technological University**, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Prof. Sajith Sethu P.
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SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled "DESIGN AND SIMULATION OF CURVATURE ASSISTING ADAPTIVE CRUISE CONTROL SYSTEM" submitted by ADARSH R NAIR(SCT19EC010), AJAY KRISHNA R S(SCT19EC021), ARJUN RAJESH KUMAR(SCT19EC039) and S VYSHAK (SCT19EC115), in partial fulfilment for the award of the degree of Bachelor of Technology in Electronics and Communication Engineering of APJ Abdul Kalam Technological University, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Sajith Sethu P.
Associate Professor,
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Ms. Malayika Vasudevan
Industry Expert
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SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled "MALAYALAM BRAILLE CHARACTER RECOGNITION USING DEEP LEARNING" submitted by ABHIJITH A J (SCT19EC002), ABHINAV KRISHNA S (SCT19EC004), ANSHU J (SCT19EC035), and ANUSREE R S (SCT19EC036) in partial fulfilment for the award of the degree of Bachelor of Technology in **Electronics and Communication Engineering** of APJ Abdul Kalam Technological University, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Sajith Sethu P.
Associate Professor,
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Dr. Renjith R J
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Project Guide



Thiruvananthapuram
May 2023

Dr. Nisha Jose K.
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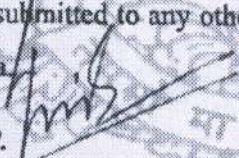
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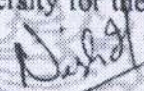


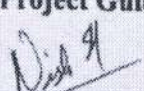
DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled **IMPROVED SPEED AND SECURITY IN ADVANCED ENCRYPTION STANDARD** submitted by **DEVA AJAY(SCT19EC050)**, **GEETHIKA B KRISHNAN(SCT19EC058)** and **GEETHU GOPAKUMAR(SCT19EC059)**, in partial fulfilment for the award of the degree of Bachelor of Technology in Electronics and Communication Engineering of APJ Abdul Kalam Technological University, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.


Sajith Sethu P.
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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled **FEDERATED LEARNING BASED DRIVER DROWSINESS DETECTION** submitted by **ADITHYA SRINIDHI S.H. (SCT19EC014)**, **ADVAITH B. (SCT19EC016)**, **ANAKHA J.V. (SCT19EC031)**, and **NAIR DRISHYA DIVAKARAN (RSCT19EC130)**, in partial fulfilment for the award of the degree of Bachelor of Technology in Electronics and Communication Engineering of APJ Abdul Kalam Technological University, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

Sajith Sethu P.
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SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 694018

CERTIFICATE

This is to certify that the project report entitled "PERFORMANCE OF WDM BASED FSOC LINK USING PAM, QAM AND OOK MODULATION UNDER DIFFERENT WEATHER CONDITIONS" submitted by Akshay T S (SCT19EC025), Aldrin A (SCT19EC028), Anish U Krishnan (SCT19EC034), Govind G (SCT19EC061), in partial fulfillment for the award of Bachelor of Technology in ELECTRONICS AND COMMUNICATION ENGINEERING from APJ Abdul Kalam Technological University, is a bonafide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.

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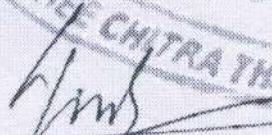






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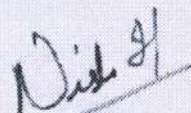
CERTIFICATE

This is to certify that the project report entitled **DEVELOPING MATHEMATICAL MODEL OF LITHIUM-ION BATTERY AND THE EFFECT OF TEMPERATURE ON SoC, SoH & SOA IN BATTERY MANAGEMENT SYSTEM** submitted by **ABHIRAM S (SCT19EC006), ASWIN R K (SCT19EC044), DEVIKA A R (SCT19EC052) and GOWRI NANDANA A R (SCT19EC062)**, in partial fulfilment for the award of the degree of Bachelor of Technology in Electronics and Communication Engineering of APJ Abdul Kalam Technological University, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.


Prof. Sajith Sethu P.
Associate Professor,
Dept. of ECE,
SCTCE
Project Coordinator


Mr. Arul G S
Industry Expert,
TBU, Tata Elxsi,
Activ@TE Programme
External Project Guide

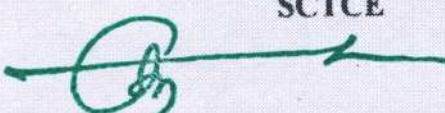

Prof. Bindu V
Associate Professor,
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Prof. (Dr.) Nisha Jose K.
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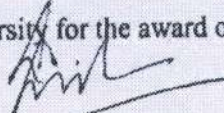

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DEPARTMENT OF ELECTRONICS & COMMUNICATION
ENGINEERING SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 695018


CERTIFICATE

This is to certify that the project report entitled **TRAFFIC SIGNAL MANAGEMENT AT TRIVANDRUM MEDICAL COLLEGE** submitted by **GAYATHRI PRAKASH (SCT19EC056), GAYATHRI S NAIR (SCT19EC057), APARNA P M (SCT18EC018) and BHARATH V P (LSCT19EC125)**, in partial fulfillment for the award of the degree of Bachelor of Technology in **Electronics and Communication Engineering** of **APJ Abdul Kalam Technological University**, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma.


Prof. Sajith Sethu P
Associate Professor,
Dept. of ECE,
SCTCE
Project Co-ordinator

Thiruvananthapuram
May, 2023



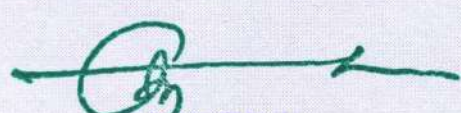

Dr. Nelwin Raj N R

Assistant Professor
Dr. NELWIN RAJ N. R
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Dr. Nisha Jose K

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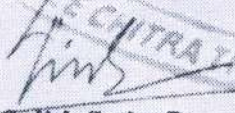

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING,
THIRUVANANTHAPURAM - 695018

CERTIFICATE

This is to certify that the project report entitled **Joint Encryption and Coded Modulation** by using **QC-LDPC Codes** submitted by **ADITHYA S (KTUSCT19EC013)**, **AKSHAY V (SCT19EC027)**, **ARUN VASUDEVAN (SCT19EC040)** and **BHAGYA LEKSHMI U (SCT19EC047)**, in partial fulfilment for the award of the degree of Bachelor of Technology in **Electronics and Communication Engineering** of **APJ Abdul Kalam Technological University**, is a bona fide record of project work carried out by them under our supervision. The contents of this report, in full or in parts, have not been submitted to any other Institution or University for the award of any degree or diploma


Sajith Sethu P.

Associate Professor,
Dept. of ECE,
SCTCE
Project Co-ordinator


Dr. Lakshmi V.S

Assistant Professor,
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Head of the Department,
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**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SREE CHITRA THIRUNAL COLLEGE OF ENGINEERING**

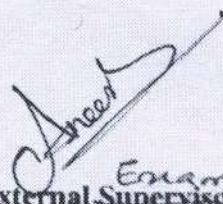
CERTIFICATE

This is to certify that the report entitled **Face Recognition Attendance System** submitted by **Emey Treasa Abraham (SCT19CS027)**, **Gayathri S Warriar (SCT19CS029)**, and **Thazneem E S (SCT19CS055)** to the APJ Abdul Kalam Technological University in partial fulfillment of the requirements for the award of the Degree of Bachelor of Technology (in Computer Science & Engineering) is a bonafide record of the project work carried out by them under our guidance and supervision. This report in any form has not been submitted to any other University or Institute for any purpose.


Head of the Department


Project Coordinator


Project Guide


External Supervisor




PRINCIPAL
Sree Chitra Thirunai
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Trivandrum - 18