

# Frequency Regulation of Interconnected Power Generating System Using Ant Colony Optimization Technique Tuned PID Controller

Control and Measurement Applications for Smart Grid pp 129-141 | Cite as

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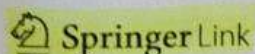
Part of the [Lecture Notes in Electrical Engineering](#) book series (LNEE, volume 822)

## Abstract

Ant colony optimization technique (ACO) is proposed for frequency regulation of single area power generating network. The proposed system consists of thermal power generating system with reheater, turbine, governor, hydrogen aqua electrolyzer (HAE), and fuel cell (FC). Proportional–integral–derivative (PID) regulator acts as an auxiliary regulator to maintain the frequency deviation during unexpected load demand. The proposed PID controller gain values are tuned by utilizing ACO tuned PID regulator with ITAE objective function. To show the superiority of the ACO technique and the performance, responses were equated with conventional method PID controller's results for the identical power network. The dynamic performance of the suggested ACO-PID regulator gives improved response over conventional PID in terms of quick settling time.

## Keywords

Ant colony optimization Proportional–integral–derivative controller Fuel cell  
Hydrogen aqua electrolyzer Frequency regulation



## PSO Optimum Design-PID Controller for Frequency Management of Single Area Multi-Source Power Generating System

Contemporary Issues in Communication, Cloud and Big Data Analytics pp 373-383 |

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### Abstract

In this article, Particle Swarm Optimization (PSO) tuned Proportional-Integral-Derived (PID) controller is proposed for frequency management of a single area multi-source power generation unit. The power system comprises of both renewable and non-renewable energy sources which includes thermal, solar and wind power generating units. In this work, Integral (I), Proportional -Integral (PI), and PID controllers are utilized as a subsidiary controller to regulate frequency deviation of the power system during unexpected load variation. The gain values of the controller are tuned by applying conventional (trial and error) scheme and PSO technique. Conventional method tuned Controller tuned using conventional method shows that PID controller provides superior response over I and PI controller response. Subsequently, PSO is implemented to tune PID controller gain values. To demonstrate the superiority of the PSO-PID controller, the output response is compared to the conventional tuned PID controller result. It is obvious from the comparison, the PSO-PID controller is provides fast settling time with minimal frequency overshoot and undershoot at various loading conditions.



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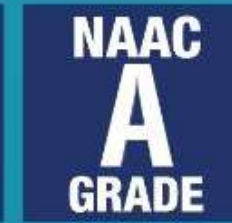


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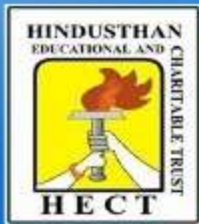
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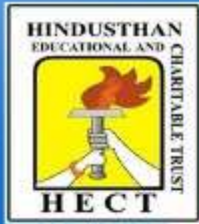
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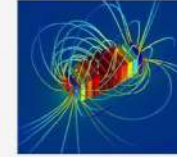
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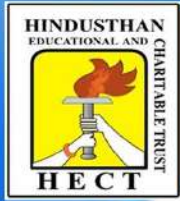
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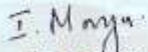
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## DEPARTMENT OF INFORMATION TECHNOLOGY

in association with

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Chennai - 600 083



Series # 1  
D6XNRI-CE000082

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D.SatheeshKumar, A/P, Paavai Engineering College

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Organized by *Department of Information Technology, Mahendra Engineering College*  
(Autonomous), Namakkal association with *ABE Semiconductor Designs, Chennai*  
on 09 May, 2020.

**Mr.S.Ananth**  
AP/IT  
Co-Ordinator

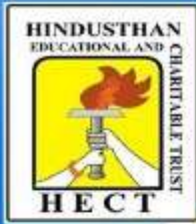
**Prof. Dr. S RAJU**  
HoD/IT  
Convenor

**Dr.A.ATHIF SHAH**  
Managing Director, ABE SEMICONDUCTOR DESIGN  
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**Dr.R.V.MAHENDRAGOWDA**  
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## *Department of Electronics and Communication Engineering*

### *Certificate of Participation*

*This is to certify that S.Loganathan, Assistant Professor : / ECE / Paavai Engineering College has participated in the Webinar on “EMERGING RESEARCH AREAS OF HETEROGENEOUS NETWORK IN WIRELESS COMMUNICATION”, organized by the Department of Electronics and Communication Engineering, in Association with Institution's Innovation Council, Hindusthan Institute of Technology, Coimbatore on 21.05.2021.*

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*Participated in the webinar on "Research Aspects of Electric Vehicle Charging station and its effect on Distribution systems" organized by the Department of Electrical and Electronics Engineering, G. Narayanamma Institute of Technology & Science (For Women), Hyderabad on 28<sup>th</sup> May 2020.*

(Mrs.E. Gouthami)  
Webinar Organizer

(Dr.N. Malla Reddy)  
Coordinator, HOD-EEE

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**Certificate of Participation**

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**G.Nandhakumar, Assistant Professor, Paavai Engineering College**

*Participated in the webinar on "Research Aspects of Electric Vehicle Charging station and its effect on Distribution systems" organized by the Department of Electrical and Electronics Engineering, G. Narayanamma Institute of Technology & Science (For Women), Hyderabad on 28<sup>th</sup> May 2020.*

(Mrs.E. Gouthami)  
 Webinar Organizer

(Dr.N. Malla Reddy)  
 Coordinator, HOD-EEE

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Excellence (VERGE), on 26th June 2020.

DR. SHOBHA SHANKAR  
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DR. SHOBHA SHANKAR  
HOD

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DR. B SADASHIVE GOWDA  
Principal



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**"Application of Mathematics in Electrical Engineering"**  
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DR. SHOBHA SHANKAR  
HOD

A handwritten signature in blue ink, likely belonging to Dr. B Sadashive Gowda.

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*Sai Satish*

**Mr.Sai Satish**  
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This is to certify that

T.P.Sharmila



Participated in

**Online Faculty Development Program on Cyber Security**

This Program is organised by **Department of Computer Science and Engineering Of Swarnandhra College Of Engineering & Technology In Association With Indian Servers** during 15th & 16th May 2020.

Handwritten signature of Mr. Sai Satish in black ink.

**Mr.Sai Satish**  
CEO, INDIAN SERVERS

Handwritten signature of Dr. P. Srinivasulu in black ink.

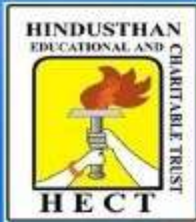
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**Dr.S.Suresh Kumar**  
Principal , SCET

Handwritten signature of Dr. S. Ramesh Babu in black ink.

**Dr.S.Ramesh Babu**  
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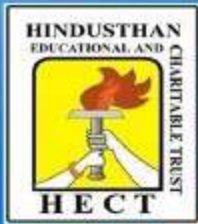
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**Professor of**

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Organized by *Department of Information Technology, Mahendra Engineering College (Autonomous), Namakkal* association with *ABE Semiconductor Designs, Chennai*  
on 09 May, 2020.

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**National Conference on Scientific Research and  
Integrated Emerging Technologies (NCSRIET-2020)**

This is certify that Dr/Mr/Ms..... **B.Venkatesan**

of ..... **Paavai Engineering College, Namakkal** ..... *has participated and presented*

*paper titled* ..... **GREEN HOUSE HYDROPHONIC FARM** ..... *in*

*the Virtual National Conference on "Scientific Research and Integrated Emerging Technologies (NCSRIET-2020)" organised by Department of  
Computer Science and Engineering of Sri Ranganathar Institute of Engineering and Technology on 24 & 25<sup>th</sup> June 2020.*

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# CERTIFICATE OF PARTICIPATION

WEBINAR ON

**Funding Opportunities -  
Proposals and Research projects for faculty**

**18 - 20 June, 2020**

This is to certify that Dr. / Mr. /Mrs. \_\_\_\_\_

**B VENKATESAN**

of \_\_\_\_\_

**Paavai Engineering College**

has participated in Three Day webinar on "Funding Opportunities - Proposals and Research projects for Faculty" held from 18 - 20 June 2020 at Cambridge Institute of Technology, Bengaluru, under the aegis of IIC and IQAC in association with NAFEMS.

**Dr. S. Shankar**  
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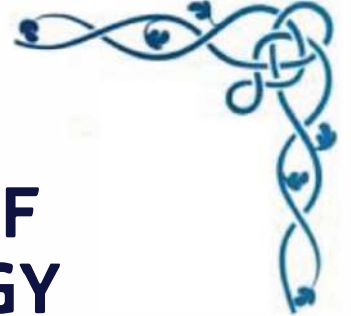
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\_\_\_\_\_ has presented a paper  
titled MAKEOVER FEATURES BASE HUMAN IDENTIFICATION  
WITH DEEP LEARNING IN ACTUAL PERIOD GUSHING ATMOSPHERES in  
the National Level web conference – Advanced Electrical Computing &  
Communication Technology (AECCT 2020) organized by Department of  
Electrical Sciences on 05.06.2020 & 06.06.2020.



  
\_\_\_\_\_  
Dr.K.G.PARTHIBAN  
HOD, ELECTRICAL SCIENCES

  
\_\_\_\_\_  
Dr.S.MUTHU  
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\_\_\_\_\_  
Dr.CHITRA MANOHAR  
CEO





The Institution of Engineers (India)  
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Jointly organizes

One Day Virtual National Conference on


"Recent Trends in Engineering and Information Technology - RTEIT'20"

### *Certificate of Presentation*

This is to Certify that Dr./Prof./Mr./Ms. **N.HEMALATHA** of PAAVAI ENGINEERING COLLEGE presented the paper entitled HEART DISEASE PREDICTION IN EFFICIENT WAY THROUGH MACHINE LEARNING METHOD in One Day Virtual National Conference on "Recent Trends in Engineering and Information Technology - RTEIT'20" jointly organized by The Institution of Engineers (India), Madurai Local Centre & K.L.N.College of Information Technology on 1st June, 2020

  
Co-Convener

Prof.M.Murugeswari  
HOD / ECE

  
Convener & Principal  
Dr.M.Arunachalam  
Principal, KLNCIT

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This is to certify that

**DR.R.ARAVIND**

**PAAVAI ENGINEERING COLLEGE AUTONOMOUS**

has participated and presented a paper titled **“COMPUTATIONAL STUDY ON FLOW THROUGH TRUNCATED CONICAL PLUG NOZZLE”** in the International Virtual Conference **“Recent Innovations in Science & Technology (RIST 2021)”** conducted on 19th & 20th June 2021, organized by **ERANAD Knowledge City Technical Campus, Malappuram, Kerala, India** in association with **ISET Research & HEXAIND Technologies and Services.**

  
**Prof. (Dr.) Vince Paul**  
Principal, EKC TC



  
**Prof. Athira B Kaimal**  
Co ordinator, HoD CSE, EKC TC

**ICAMCCT\_234: CONTROL OF SHOCK WAVE BOUNDARY LAYER INTERACTION USING BLEED SUCTION IN HYPERSONIC VEHICLE**

**Dr.R.Aravind, Aburva. A, Akalya. S, Vaishnavi. K**

Paavai Engineering college, Namakkal.

**Abstract** - Develop a Numerical scheme to predict the location of subsonic separation bubble (SSB) formed due to the shock wave boundary layer interaction .To validate the Numerical scheme and grid by conducting validation studies to identify the location Subsonic separation bubble based on the Numerical analysis. To modify the inlet design to establish suction to control the Subsonic separation bubble using boundary layer bleeding. Compare the inlet performance of a inlet before and after the boundary layer bleeding.

---

**ICAMCCT\_235: STUDY OF WATER ABSORPTION AND THE OXIDATION BEHAVIOR OF JUTE FIBER REINFORCED COMPOSITES**

**KiranReghunath, Senthil Saravanan M S\*, J.B Sajin, Vidya. V**

Department of Mechanical Engineering, Sree Buddha College of Engineering, Pattoor, Alappuzha, Kerala, India – 690529

**Abstract** - Water absorption of natural fiber plastic composites is a serious concern especially for their potential outdoor applications. In this paper, jute fiber reinforced with unsaturated polyester composites are subjected to water immersion tests in order to study the effects of water absorption in normal and salt water. Water absorption tests were conducted by immersing composite specimens into two different environmental conditions included normal water and sea water at room temperature for a period up to 48h.The water absorption of jute fiber reinforced unsaturated polyester composites at salt water follows the pseudo-Fickian behavior. The thermal stability of the prepared composites is evaluated by thermogravimetric analysis. It has been observed from the above tests, jute fiber composites show better hydrophobic nature and degradation at high temperatures were studied

**Keywords:** *Jute fiber, Composites, TGA, pseudo-fickian*

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**ICAMCCT\_236: MODELLING AND FABRICATION OF AERIAL SURVEILLANCE AND MULTIPURPOSE GAS LEAKAGE DETECTION DRONE**

**K Gokulnath, Madhavan M, Narendhiran N, Vignesh C**

Department of Aeronautical Engineering, Paavai Engineering College, Namakkal.

**Abstract** - An unmanned aerial vehicle is defined as an aircraft which has no human operator and it uses aerodynamic forces to ensure the vehicle is lifted and can fly autonomously or control by remotely.It can be expanded or retrieved.The drones and possibilities of using its construction and important elements are propeller,engine,power distribution,flight control system,electronic control and communication system.It is related with roll,yaw,lift.In addition it is equipped with the different multigas leakage detecting sensor which is used to detect the leak gases like carbonmonoxide(CO),alcohol(OH),smoke and Liquefied petroleum gas(LPG) and also wifi transfer camera is fitted to locate the position of drone and its live stream.These output values are monitored through the android mobile phones and laptops.

**Keywords:** Drone, Aerial, surveillance, Gas-leakge-detection, sensor, unmaned aerial, vehicle, aurdinouno, leak rate quantification.

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(An Autonomous Institution, Affiliated to Anna University, Chennai)

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## Department of Mechanical Engineering

### Certificate of Participation

*This is to certify that*

Dr. R. Arravind/Professor and Head/Aero

of

Paavai Engineering College, Namakkal-637018

*has participated in the National Workshop on “Recent Trends in Manufacturing Engineering” organized by the Department of Mechanical Engineering, SSN College of Engineering, Chennai on 29<sup>th</sup> December 2020.*

*Dr. D. Ananthapadmanaban* *Dr. K. Jayakumar*

*Conveners*

*K. Jayakumar*

*Dr. N. Nallusamy*

*HoD / Mech*

*Dr. V.E. Annamalai*

*Principal*



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## Certificate of Presentation

This is to certify that Dr/Mr/Ms **K. Gokulnath** ..... of  
Paavai Engineering College, Namakkal ..... has presented a paper entitled  
**Experimental investigation of shock wave and boundary layer interaction on the external transonic flow over an airfoil** .....  
in the International Conference on Advances in Materials, Computing and Communication Technologies  
**'ICAMCCT 2021'** organized by **ANNAI VAILANKANNI COLLEGE OF ENGINEERING**, Kanyakumari,  
on 10<sup>th</sup> April 2021.

  
Convener

  
Vice Principal

  
Principal



## Certificate of Presentation

Awarded to  
**GOKULNATH K, Paavai Engineering College**

for presenting a research paper titled  
**EXPERIMENTAL ANALYSIS OF ALTERNATE REFRIGERANT MIXTURES IN REFRIGERATION SYSTEM**

at the International Virtual Conference on APPLIED SCIENCE, TECHNOLOGY MANAGEMENT  
AND LANGUAGE STUDIES [ASTMLS - 2020] on 11<sup>th</sup> & 12<sup>th</sup> December, 2020.

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Sona College of Technology



**ICMMM2021**



## Certificate of Participation

This certificate is awarded to **Mr. Gokulnath K,** Assistant Professor, Department of Aeronautical Engineering from  
**Paavai Engineering College, Namakkal-18, Tamilnadu., India.** in recognition of oral and technical presentation  
titled **Performance Estimation and Redesign of Horizontal Axis Wind Turbine (HAWT) Blade.** in

**ICMMM 2021, 3<sup>rd</sup> INTERNATIONAL CONFERENCE ON MATERIALS, MANUFACTURING AND MODELLING**

held in VIRTUAL MODE on 19<sup>th</sup> - 21<sup>st</sup> Mar 2021.

*Dr. Anthony Xavier M*  
Organizing Chair

*Dr. Vasudevan R*  
Dean – School of Mechanical Engineering

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# Certificate

International Conference on  
Chemical, Mechanical and Environmental Sciences

## ICCMES 2021

25<sup>th</sup> & 26<sup>th</sup>, March 2021

This Certificate is presented to

**P Karthikeyan**

**Department of Aeronautical Engineering,  
PAAVAI Engineering College, Namakkal**

for the research paper titled **“Three-dimensional computational analysis of transverse injection in a supersonic combustor”** in the International Conference on Chemical, Mechanical and Environmental Sciences (ICCMES 2021) held at **KPR Institute of Engineering and Technology, Coimbatore, Tamilnadu, India.**



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TAMIL NADU - 636007  
PH. NO : 9865154751



No. of weeks of NPTEL Courses	Equivalence of NPTEL course with regular FDP
4	$\frac{1}{2}$ FDP of one week
8	Full FDP of one week
12	$1\frac{1}{2}$ FDP

Duration of NPTEL course: 4 Weeks



# NPTEL-AICTE Faculty Development Programme



(Funded by the Ministry of HRD, Govt. of India)



This certificate is awarded to

**RENUKADEVI P**


for successfully completing the course

**Effective Engineering Teaching In Practice**

with a consolidated score of **62 %**

  
Prof. Andrew Thangaraj  
NPTEL Coordinator  
IIT Madras

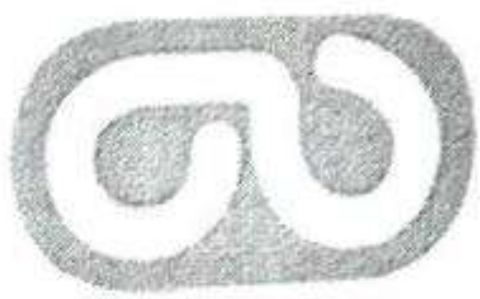
(Jan-Feb 2020)

  
Prof. Dileep N. Malkhede  
Advisor-I (Research, Institute & Faculty Development)  
All India Council for Technical Education

Roll No: NPTEL20GE03S12230181

To validate and check scores: <http://nptel.ac.in/noc>

The candidate has studied the above course through MOOCs mode, has submitted online assignments and passed proctored exams.  
This certificate is therefore acceptable for promotions under CAS as per AICTE notifications dated 24<sup>th</sup> July 2018, similar to other refresher / orientation courses.  
F.No. AICTE / RIFD / FDP through MOOCs / 2017-18



**GUUVI**

tech deserves you



# CERTIFICATE OF COMPLETION

THIS IS TO CERTIFY THAT

BANUMATHY RAMESH

HAS SUCCESSFULLY COMPLETED

PYTHON

DATE: 31/03/2020

CERTIFICATE NUMBER: 138J3S74ND8056Z650

\*THIS CERTIFICATE IS AUTO GENERATED



*S.P. Balamurugan*

S.P. BALAMURUGAN  
CO-FOUNDER AND CEO



**GUVI**

tech deserves you

**VERIFIED** ✓

# CERTIFICATE OF COMPLETION

THIS IS TO CERTIFY THAT

**BANUMATHY RAMESH**

**HAS SUCCESSFULLY COMPLETED**

**POWERBI**

DATE: 29/03/2020

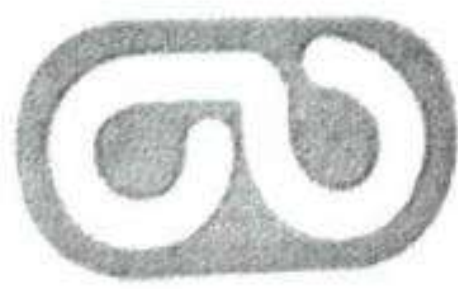
CERTIFICATE NUMBER: 9558IWX691U4V9T586

\*THIS CERTIFICATE IS AUTO GENERATED



*S.P. Balamurugan*

**S.P. BALAMURUGAN**  
**CO-FOUNDER AND CEO**



GUVI

tech deserves you

VERIFIED ✓

## CERTIFICATE OF COMPLETION

THIS IS TO CERTIFY THAT

BANUMATHY RAMESH

HAS SUCCESSFULLY COMPLETED

GAME DEVELOPMENT USING PYGAME

DATE: 30/03/2020

CERTIFICATE NUMBER: C18F65351Z59U57B6D

\*THIS CERTIFICATE IS AUTO GENERATED



*S.P. Balamurugan*

S.P. BALAMURUGAN  
CO-FOUNDER AND CEO





**GUVI**

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**VERIFIED** ✓

## CERTIFICATE OF COMPLETION

THIS IS TO CERTIFY THAT

**BANUMATHY RAMESH**

**HAS SUCCESSFULLY COMPLETED**

**ANGULAR**

**DATE: 30/03/2020**

CERTIFICATE NUMBER: 53F5361Y85MH0DKQJ4

\*THIS CERTIFICATE IS AUTO GENERATED



*S.P. Balamurugan*

**S.P. BALAMURUGAN**  
**CO-FOUNDER AND CEO**



**MAHENDRA**  
EDUCATIONAL INSTITUTIONS  
SINCE 1941



# MAHENDRA ENGINEERING COLLEGE

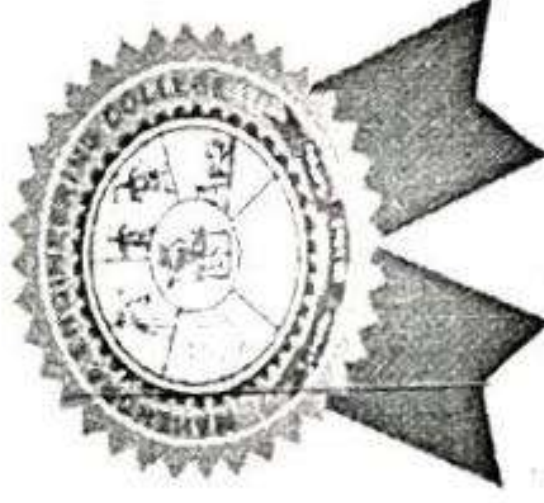
(Autonomous)

Accredited by NAAC 'A' grade & NBA Tier - 1 (WA) UG - CSE, ECE, EEE  
Mahendhirapuri, Mallasamudram, Namakkal Dt - 637 503, Tamil Nadu

## Department of Information Technology

This is to certify that

Dr.D.Banumathy, Prof/CSE/Paavai Engineering College has  
Participated in webinar on "Programming Essential in  
IT Industry" Organized by Department of Information Technology,  
Mahendra Engineering College (Autonomous) on 5th, June  
2021.



ER. BAALAJI MANIVANNAN  
Senior Data Analyst,  
SagasIT Analytics Pvt. Ltd.,  
Bangalore.

DR. S. ANANTH  
ASP/IT  
Co-Ordinator

PROF. DR. S. RAJU  
HOD / IT  
Convenor

DR. R. V. MAHENDRA GOWDA  
Principal

Made for free with Certify'em

\*This is digitally generated certificate hence no signature is required\*



Mandsaur University, Mandsaur  
SH-31, Mahow Neemuch, By Pass Road, Mandsaur (MP)

THIS CERTIFIES THAT

**Dr. N. Magendiran**

Paavai Engineering College

has participated in National Level online webinar on  
"Angular JS and J Query Compatibility" held on 15th May 2021 by Department of  
Computer Science and Application, Mandsaur University, Mandsaur (MP)

*Mudita Dave Nagar*

Mudita Dave Nagar  
COORDINATOR

*Himanshu Barhaiya*

Himanshu Barhaiya  
CONVENER

*Nilesh Jain*

Dr. Nilesh Jain  
HOD CSA

Made for free with Certify'em



# CERTIFICATE

— OF PARTICIPATION —



*This certificate is to Appreciate*

**MAGENDIRAN NATARAJAN**

*For actively attending the webinar on the topic*

*“ Virtual Interactive Classroom For Teachers And The Challenging Technologies In*

*Post Covid – 19 Era” Organized by IFERP on 05<sup>th</sup> June, 2020*



**Dr.C.V.Gopinath**  
Principal  
BITS, Visakhapatnam

**Dr.Ajay B Gadicha**  
Associate Professor  
P.R. Pote College of Engineering and Management  
Amravati

**Mr. Rudra Bhanu Satpathy**  
Chief Executive Officer  
IFERP



# CERTIFICATE OF PARTICIPATION

**Dr. D.BANUMATHY**

Paavai Engineering College

Successfully Completed Training on "Design thinking & Innovations" conducted as part of

## IIC Innovation Ambassador Training Series

Organized by Institution's Innovation Council of MHRD's Innovation Cell, AICTE held at Sri Krishna College of Engineering and Technology, Coimbatore, Tamil Nadu on 6-7 January 2020.

Prof. Anil D. Sahasrabudhe  
Chairman  
AICTE

Prof. M.P. Poonia  
Vice Chairman  
AICTE

Dr. Abhay Jere  
Chief Innovation Officer  
MHRD's Innovation Cell



scan to verify

eCertificate No : 322

Date of issue: 15-02-2020



# EMPOWER

Webinars by Fluke Biomedical

**S. Dhanalakshmi**

Has attended the following webinar

**Session 1 - Patient Monitor Testing: Overview and MEQA**

on

**May 6, 2021**



## CERTIFICATE OF ATTENDANCE

This webinar is eligible for 1 CE credit from the ACI

# EMPOWER

Webinars by Fluke Biomedical

**R. Priyadharshini**

Has attended the following webinar

Session 1 - Patient Monitor Testing: Overview and MEQA

on

**May 6, 2021**



## CERTIFICATE OF ATTENDANCE

This webinar is eligible for 1 CE credit from the ACI



**HINDUSTHAN COLLEGE OF ENGINEERING & TECHNOLOGY  
COIMBATORE**

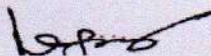
**CERTIFICATE OF PARTICIPATION**

This is to certify that

D.Murugesan, ASSISTANT PROFESSOR, EEE

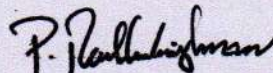
Paavai Engineering College

has participated the webinar on "THERMOELECTRIC ENERGY CONVERSION SYSTEMS" presented by Dr. S. Manikandan, Research Assistant Professor, SRM Institute of Science and Technology, Chennai, on 23<sup>rd</sup> June 2020.



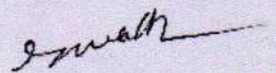
CONVENOR

**Dr. N. P. Anantha Moorthy**  
HOD



CO-ORDINATOR

**Mr. P. Radhakrishnan**  
Assistant Professor



CO-ORDINATOR

**Dr. K. Mathan**  
Associate Professor

# EMPOWER

Webinars by Fluke Biomedical

**P. Ilayaraja**

Has attended the following webinar

**Session 1 - Patient Monitor Testing: Overview and MEQA**

on

**May 6, 2021**



## CERTIFICATE OF ATTENDANCE

This webinar is eligible for 1 CE credit from the ACI

# EMPOWER

Webinars by Fluke Biomedical

**T. Saranya**

Has attended the following webinar

**Session 1 - Patient Monitor Testing: Overview and MEQA**

on

**May 6, 2021**



## CERTIFICATE OF ATTENDANCE

This webinar is eligible for 1 CE credit from the ACI

# **EMPOWER**

Webinars by Fluke Biomedical

**P. Deepika**

Has attended the following webinar

**Session 1 - Patient Monitor Testing: Overview and MEQA**

on

**May 6, 2021**



## **CERTIFICATE OF ATTENDANCE**

This webinar is eligible for 1 CE credit from the ACI

----- Forwarded message -----

From: **Duolingo English Test** <[receipts+acct\\_15TGcGJUu4MsRlhR@stripe.com](mailto:receipts+acct_15TGcGJUu4MsRlhR@stripe.com)>

Date: Sat, 29 May 2021, 10:45

Subject: Your Duolingo English Test receipt [#1543-5859]

To: <[ppcsabari@gmail.com](mailto:ppcsabari@gmail.com)>



## Receipt from Duolingo English Test

Receipt #1543-5859

AMOUNT PAID	DATE PAID	PAYMENT METHOD
₹3,380.00	May 29, 2021	<b>VISA</b> - 9444

### SUMMARY

Payment to Duolingo English Test	₹3,380.00
<b>Amount charged</b>	<b>₹3,380.00</b>

If you have any questions, visit our support site at <https://englishtest.duolingo.com/>, contact us at [englishtest-support@duolingo.com](mailto:englishtest-support@duolingo.com), or call at +1 412-567-6602.

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Something wrong with the email? [View it in your browser.](#)

You're receiving this email because you made a purchase at Duolingo English Test, which partners with Stripe to provide invoicing and payment processing.



# CERTIFICATE

## OF PARTICIPATION

This certificate is proudly given to

**C.RAVISANKAR**

---

For attending the **PROFILE BUILDING WORKSHOP**. We appreciate your presence and wish you a successful future

2021-05-07

Date

Cherag Bachhawat.

Cherag Bachhawat  
Founder/Director



# CERTIFICATE

## OF PARTICIPATION

This certificate is proudly given to

**M.VETRISELVAN**

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For attending the **PROFILE BUILDING WORKSHOP**. We appreciate your presence and wish you a successful future

2021-05-07

---

Date

*Cherag Bachhawat*

---

Cherag Bachhawat  
Founder/Director



# CERTIFICATE

## OF PARTICIPATION

This certificate is proudly given to

**S.RAJASEKAR**

---

For attending the **PROFILE BUILDING WORKSHOP**. We appreciate your presence and wish you a successful future

2021-05-07

---

Date

*Cherag Bachhawat.*

---

Cherag Bachhawat  
Founder/Director





## Narasu's Sarathy Institute of Technology

Approved by AICTE | Accredited By NAAC | Affiliated to Anna University

Salem Bengaluru Highway NH - 7, Poonaripatty, Kadayampatty Taluk, Salem - 636305.

Admin Office: 93449-72274, Admission Cell: 93449-72275, 73977-56003,  
admin@nait.edu.in, www.nait.edu.in

# CERTIFICATE

OF PARTICIPATION

THIS CERTIFICATE IS PRESENTED TO

Dr.D.R.P.RAJARATHNAM

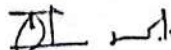
from **PAAVAI ENGINEERING COLLEGE (AUTONOMOUS)**

has participated in a National Level Workshop titled,

**"Smart Materials In Mechanical Design And Technology"**

Organized by Department of Mechanical Engineering , on 27<sup>th</sup> March 2021 at Narasu's Sarathy  
Institute of Technology, Salem.

  
Coordinator

  
Principal

  
Chairman



**Narasu's Sarathy  
Institute of Technology**

Approved by AICTE | Accredited By NAAC | Affiliated to Anna University

Salem Bengaluru Highway NH - 7, Poosaripatty, Kadayampatty Taluk, Salem - 636305.

Admin Office: 93449-72274, Admission Cell: 93449-72275, 73977-56003,  
admin@nsit.edu.in, www.nsit.edu.in

# CERTIFICATE

OF PARTICIPATION

THIS CERTIFICATE IS PRESENTED TO

C.VIBINSTALIN

from **PAAVAI ENGINEERING COLLEGE (AUTONOMOUS)**

has participated in a National Level Workshop titled,

"Smart Materials In Mechanical Design And Technology"

Organized by Department of Mechanical Engineering, on 27<sup>th</sup> March 2021 at Narasu's Sarathy  
Institute of Technology, Salem.

Coordinator

Principal

Chairman



**Narasu's Sarathy  
Institute of Technology**

Approved by AICTE | Accredited By NAAC | Affiliated to Anna University

Salem Bengaluru Highway NH - 7, Poosaripatty, Kadayampatty Taluk, Salem - 636305.

Admin Office: 93449-72274, Admission Cell: 93449-72275, 73977-56003,  
admin@nsit.edu.in, www.nsit.edu.in

# CERTIFICATE

OF PARTICIPATION

THIS CERTIFICATE IS PRESENTED TO

C.SUMITHRA

from PAAVAI ENGINEERING COLLEGE (AUTONOMOUS)

has participated in a National Level Workshop titled, \_\_\_\_\_

"Smart Materials In Mechanical Design And Technology"

Organized by Department of Mechanical Engineering , on 27<sup>th</sup> March 2021 at Narasu's Sarathy  
Institute of Technology, Salem.

Coordinator

Principal

Chairman



# RAJIV GANDHI COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE and Affiliated to Pondicherry University)

Kirumampakkam, Puducherry - 607403

(Accredited with 'A' Grade by NAAC)



## CERTIFICATE OF PARTICIPATION

in

AUTODESK® AutoCAD 2021 & Job – Business Opportunities for Engineering Graduates

This is to certify that *Mr./Ms./Mrs./Dr C.SUMITHRA* from PAAVAI ENGINEERING COLLEGE actively participated in the Two Days Online Training cum Workshop titled AUTODESK® AutoCAD 2021 & Job – Business Opportunities for Engineering Graduates organized by Institution's Innovation Council of Rajiv Gandhi College of Engineering and Technology in association with MSME Technology Centre, Puducherry on 18<sup>th</sup> and 19<sup>th</sup> June 2020.



*Dinesh Babu R*  
IIC Ambassador  
Mr. Dinesh Babu R

*Juno Jasmine J*  
IIC President (2019 - 20)  
Dr. Juno Jasmine J

*Vijayakrishna Rapaka E*  
Principal

Dr. Vijayakrishna Rapaka E

/iicrgcet

/iicrgcet

/rgcetpdy

rgcetpdy.ac.in



# RAJIV GANDHI COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE and Affiliated to Pondicherry University)

Kirumampakkam, Puducherry - 607403

(Accredited with 'A' Grade by NAAC)



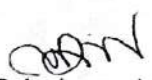
## CERTIFICATE OF PARTICIPATION

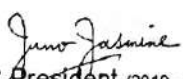
in


AUTODESK® AutoCAD 2021 & Job – Business Opportunities for Engineering Graduates

This is to certify that *Mr./Ms./Mrs./Dr* S.DHINAKAR from PAAVAI ENGINEERING COLLEGE actively participated in the Two Days Online Training cum Workshop titled AUTODESK® AutoCAD 2021 & Job – Business Opportunities for Engineering Graduates organized by Institution's Innovation Council of Rajiv Gandhi College of Engineering and Technology in association with MSME Technology Centre, Puducherry on 18<sup>th</sup> and 19<sup>th</sup> June 2020.



  
IIC Ambassador  
Mr. Dinesh Babu R


  
IIC President (2019 – 20)  
Dr. Juno Jasmine J

  
Principal  
Dr. Vijayakrishna Rapaka E

 /iicrgcet

 /iicrgcet

 /rgcetpdy

 rgcetpdy.ac.in



# SWARNANDHRA COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

SEETHARAMPURAM, NARASAPUR, W.G.DISTRICT, ANDHRA PRADESH-534280

DEPARTMENT OF MECHANICAL ENGINEERING

## CERTIFICATE OF PARTICIPATION

This is to certify that

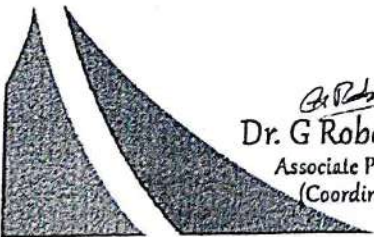
Mr.R.ARUNBABU

Paavai Engineering College

has attended an THREE DAYS ONLINE WORKSHOP ON

“REAL TIME APPLICATIONS OF CAD/CAM & SYSTEMS ENGINEERING IN INDUSTRY”

held during 5th June to 7th June 2020.



*Dr. G Robert Singh*  
Dr. G Robert Singh  
Associate Professor  
(Coordinator)

*A. Gopichand*  
Dr. A Gopichand  
Professor & HOD  
(Convener)

*Dr. S Suresh Kumar*  
Dr. S Suresh Kumar  
Principal

*Dr. S Ramesh Babu*  
Dr. S Ramesh Babu  
Secretary & Correspondent



# SWARNANDHRA COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous)

SEETHARAMPURAM, NARASAPUR, W.G.DISTRICT, ANDHRA PRADESH-534280

DEPARTMENT OF MECHANICAL ENGINEERING

## CERTIFICATE OF PARTICIPATION

This is to certify that

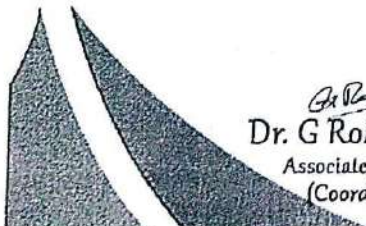
Dr.R.T.AJAYKARTHIK

Paavai Engineering College

has attended an THREE DAYS ONLINE WORKSHOP ON

“REAL TIME APPLICATIONS OF CAD/CAM & SYSTEMS ENGINEERING IN INDUSTRY”

held during 5th June to 7th June 2020.



*Dr. G Robert Singh*  
Dr. G Robert Singh  
Associate Professor  
(Coordinator)

*Dr. A Gopichand*  
Dr. A Gopichand  
Professor & HOD  
(Convener)

*Dr. S Suresh Kumar*  
Dr. S Suresh Kumar  
Principal

*Dr. S Ramesh Babu*  
Dr. S Ramesh Babu  
Secretary & Correspondent



# NEHRU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution affiliated to Bharathiar University)

Department of Commerce

In Association with



**COLLEGE OF BUSINESS & ECONOMICS,  
Bule Hora University, Ethiopia**

**Certificate of Participation**

**This is to certify that**

.....  
DR.S.SUMATHI

.....  
PAAVAI ENGINEERING COLLEGE

**has participated in the International Virtual Conference on  
" DIGITAL MARKETING : TRENDS TO LOOK IN 2021" held on**

**April 23, 2021.**

**Dr.M.Kanagarathinam**  
Convenor

**Dr.D.Barani Kumar**  
AP, Bule Hora University

**Dr.E.Anirudhan**

Made for free with Certify'em





# NEHRU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution affiliated to Bharathiar University)

Department of Commerce

In Association with



**COLLEGE OF BUSINESS & ECONOMICS,  
Bule Hora University, Ethiopia**

**Certificate of Participation**

**This is to certify that**

G.AARTHANA

PAAVAI ENGINEERING COLLEGE

.....  
**has participated in the International Virtual Conference on  
" DIGITAL MARKETING : TRENDS TO LOOK IN 2021" held on  
April 23, 2021.**

**Dr.M.Kanagarathinam**  
Convenor

**Dr.D.Barani Kumar**  
AP, Bule Hora University

**Dr.B.Anirudhan**

Made for free with Certify'em



# NEHRU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution affiliated to Bharathiar University)

Department of Commerce

In Association with



**COLLEGE OF BUSINESS & ECONOMICS,**

**Bule Hora University, Ethiopia**

**Certificate of Participation**

**This is to certify that**

J.ISWARYA

PAAVAI ENGINEERING COLLEGE

**has participated in the International Virtual Conference on  
" DIGITAL MARKETING : TRENDS TO LOOK IN 2021" held on**

**April 23, 2021.**

**Dr.M.Kanagarathinam**  
Convenor

**Dr.D.Barani Kumar**  
AP, Bule Hora University

**Dr.E.Anirudhan**

Made for free with Certify'em



# NEHRU ARTS AND SCIENCE COLLEGE

(An Autonomous Institution affiliated to Bharathiar University)

Department of Commerce

In Association with

**COLLEGE OF BUSINESS & ECONOMICS,**

**Bule Hora University, Ethiopia**

**Certificate of Participation**

**This is to certify that**

.....L.THIYAGARAJAN.....

.....PAAVAI ENGINEERING COLLEGE.....

**has participated in the International Virtual Conference on  
" DIGITAL MARKETING : TRENDS TO LOOK IN 2021" held on**

**April 23, 2021.**

**Dr.M.Kanagarathinam**  
Convenor

**Dr.D.Barani Kumar**  
AP, Bule Hora University

**Dr.E.Anirudhan**

Made for free with Certify'em



Since 1947

# PSG COLLEGE OF ARTS & SCIENCE

An Autonomous College, Affiliated to Bharathiar University  
Accredited with 'A' Grade by NAAC (3rd cycle)  
College with Potential for Excellence (Status Awarded by the UGC)  
Star College Status Awarded by DBT-MST  
An ISO 9001 : 2015 Certified Institution



ISO 9001:2015

www.tuv.com  
ID: 3100012918

## Department of Economics

### Participation Certificate

This is to certify that

**DR.S.SUMATHI**

**Professor of MBA, Paavai Engineering College, Namakkal, Tamil Nadu**

has participated in the Online Three Days National Level Workshop on "Research Methodology and Data Analysis for Social Sciences" held on 17, 18, & 19 June, 2020 through Google Meet platform organized by Department of Economics (Aided), PSG College of Arts and Science, Coimbatore.

**Dr. R. RAVIKUMAR**

Assistant Professor & Head (i/c)

**Dr. D. BRINDHA**

Principal



Since 1947

# PSG COLLEGE OF ARTS & SCIENCE

An Autonomous College, Affiliated to Bharathiar University  
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Star College Status Awarded by DBT-MST  
An ISO 9001 : 2015 Certified Institution



ISO 9001:2015

www.tuv.com  
ID: 9105013918

## Department of Economics

### Participation Certificate

This is to certify that

**G.AARTHANA**

**Assistant Professor of MBA, Paavai Engineering College, Namakkal, Tamil Nadu**

has participated in the Online Three Days National Level Workshop on "Research Methodology and Data Analysis for Social Sciences" held on 17, 18, & 19 June, 2020 through Google Meet platform organized by Department of Economics (Aided), PSG College of Arts and Science, Coimbatore.

**Dr. R. RAVIKUMAR**  
Assistant Professor & Head (i/c)

**Dr. D. BRINDHA**  
Principal



Since 1947

# PSG COLLEGE OF ARTS & SCIENCE

An Autonomous College, Affiliated to Bharathiar University  
Accredited with 'A' Grade by NAAC (3rd cycle)  
College with Potential for Excellence (Status Awarded by the UGC)  
Star College Status Awarded by DBT-MST  
An ISO 9001 : 2015 Certified Institution



ISO 9001:2015

www.tuv.com  
ID: 3100012919

## Department of Economics

### Participation Certificate

This is to certify that

**J.ISWARYA**

**Assistant Professor of MBA, Paavai Engineering College, Namakkal, Tamil Nadu**

has participated in the Online Three Days National Level Workshop on "Research Methodology and Data Analysis for Social Sciences" held on 17, 18, & 19 June, 2020 through Google Meet platform organized by Department of Economics (Aided), PSG College of Arts and Science, Coimbatore.

**Dr. R. RAVIKUMAR**

Assistant Professor & Head (i/c)

**Dr. D. BRINDHA**

Principal



# SRM TRP ENGINEERING COLLEGE

SRM Nagar, Irungalur-621 105, Mannachanallur Taluk,  
Tiruchirappalli District, Tamilnadu




Virtual National Conference on Artificial Intelligence in  
Mechanical and Civil Engineering (NCAIMC-2020)


## Certificate

This is to certify that the following paper has been presented in the “Virtual National Conference on Artificial Intelligence in Mechanical and Civil Engineering” (NCAIMC-2020) held on 4<sup>th</sup> July 2020.

Title of the paper : **SPLICE CONNECTION USING RAILWAY STEEL TRUSS BRIDGES.**

Author : **Mrs. J. UMANAMBI , PROFESSOR  
PAAVAI ENGINEERING COLLEGE**

  
Mr.S. MANIMARAN  
Coordinators

  
Mr. K. SURESHRAJA  
Convener

  
Dr. B. GANESH BABU  
Principal



# **DHAANISH AHMED** **INSTITUTE OF TECHNOLOGY**



An ISO 9001:2015 Certified Institution  
(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)  
K. G Chavadi, Coimbatore-641105, India.  
E-mail: info@dhaanishcollege.in, website: www.dhaanish.com

## **International E-Conference on Recent Developments in Engineering & Technology (ICRDET'21)**

# **CERTIFICATE OF PARTICIPATION**

This is to certify that Prof/Dr./Mr./Ms./Mrs. K SHARMILA DEVI  
of PAAVAI ENGINEERING COLLEGE, NAMAKKAL.....has presented a paper  
on EXPERIMENTAL INVESTIGATION OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT USING  
MESQUITE AND RICE HUSK ASH.....  
in International E-Conference on Recent Developments in Engineering & Technology  
organized by Dhaanish Ahmed Institute of Technology on 3<sup>rd</sup> April 2021.

CONVENOR

PRINCIPAL

CEO



KONGUNADU

# COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous)

Approved by AICTE, New Delhi & Affiliated to Anna University Chennai, Accredited by NBA (CSE, ECE,EEE) & NAAC with B++ Grade,  
Recognized by UGC with 2 (f) & 12(B) and ISO 9001:2015 Certified Institution  
Namakkal – Trichy Highways, Tholurpatti(PO), Thottiam (TK), Trichy (DT)

## Department of Civil Engineering

Organize

### NATIONAL WEB CONFERENCE

#### Certificate of Presentation

This is to certify that Dr./Mr./Ms. **P.VIGNESH** of **Paavai Engineering college** has Participated / Presented a paper entitled **An Analysis of Formwork Failures and Effectiveness of Safety** during National Web Conference on “**Recent Innovations and Advancements in Civil Engineering (RIACE-2K20)**” organized by Department of Civil Engineering, Kongunadu College of Engineering and Technology, Thottiam on 12/06/2020.

  
HoD/ Civil

  
Dean (R & D)

  
Principal



# Dr.N.G.P. Institute of Technology

(Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai)  
Recognized by UGC & Accredited by NAAC & NBA (BME, CSE, ECE, EEE & MECH)  
Dr. N.G.P, Kalapatti Road, Coimbatore-641 048.

## Department of Civil Engineering

### Certificate of Presentation

This is to certify that

**S.Gayathri**

has presented the paper titled " Experimental Study on Behaviour of Cold Formed Steel Lipped Angle Columns" in the National Level Web Conference on Recent Innovations and Advancements in Engineering & Technology (RIAET 2020) held during June 5-6, 2020 organised by the Department of Civil Engineering, Dr.N.G.P IT, Coimbatore.

**Dr.P.MUTHUPRIYA**  
CONVENOR, HOD/ CIVIL

**Dr.K.PORKUMARAN**  
PRINCIPAL



# **DHAANISH AHMED** **INSTITUTE OF TECHNOLOGY**



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K. G. Chevadi, Colmbatore-641105, India.  
E-mail: info@dhaanishcollege.in, website: www.dhaanish.com

## International E-Conference on Recent Developments in Engineering & Technology **(ICRDET'21)**

# CERTIFICATE OF PARTICIPATION

This is to certify that Prof./Dr./Mr./Ms./Mrs. RAJESWARI S  
of PAAVAI ENGINEERING COLLEGE, NAMAKKAL.....has presented a paper  
ON EFFECT OF ADDITION OF MAGNESITE DUST AS A PARTIAL REPLACEMENT OF FINE AGGREGATE IN  
PERVIOUS CONCRETE.....  
in International E-Conference on Recent Developments in Engineering & Technology  
organized by Dhaanish Ahmed Institute of Technology on 3<sup>rd</sup> April 2021.

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PRINCIPAL

CEO



# KONGUNADU COLLEGE OF ENGINEERING AND TECHNOLOGY

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## Department of Civil Engineering


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### NATIONAL WEB CONFERENCE

#### Certificate of Presentation

This is to certify that Dr./Mr./Ms. S.RAJESWARI of Paavai Engineering college has Participated / Presented a paper entitled **Strength and durability study on GPC** during National Web Conference on “Recent Innovations and Advancements in Civil Engineering (RIACE-2K20)” organized by Department of Civil Engineering, Kongunadu College of Engineering and Technology, Thottiam on 12/06/2020.

  
HoD/ Civil

  
Dean (R & D)

  
Principal



# MUTHAYAMMAL ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi, Accredited by NAAC & Affiliated to Anna University)  
Rasipuram - 637 408, Namakkal Dist., Tamil Nadu, India.

Department of Civil Engineering  
organized

**NATIONAL CONFERENCE ON INNOVATIONS IN CONSTRUCTION MATERIALS  
(VIRTUAL)**

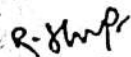
## Certificate of Participation


This is to certify that Mr. M. RAJKANNAN, AP/CIVIL

has participated / Presented a paper entitled ANALYSIS OF RCC BEAM WITH GEOGRID  
USING ANSYS SOFTWARE.

National Conference on Innovations in Construction Materials (Virtual) organized by Department of Civil  
Engineering, Muthayammal Engineering College, Rasipuram held on 15<sup>th</sup> April 2021.

  
Co-ordinator

  
Organizing Secretary

  
Principal



**VIT**

Vellore Institute of Technology  
Established in the year 1984. Accredited by AICTE, UGC, NBA, AACSB, ISO 9001:2015.

International Virtual Conference &

**High-Performance Materials for Energy,  
Environment & Healthcare in the Digital Era**



30<sup>th</sup> June & 1<sup>st</sup> July 2020

*Organized by*

*Centre for Materials Technology, School of Advanced Sciences,*

*VIT, Vellore - 632 014, India*

**CERTIFICATE**

This is to certify that Dr./Mr./Ms. B. Karthiga of PAAVAI ENGINEERING COLLEGE has participated in International Virtual Conference on “High-Performance Materials for Energy, Environment & Healthcare in the Digital Era” organized by Centre for Materials Technology, School of Advanced Sciences, VIT, Vellore, India during 30<sup>th</sup> June & 1<sup>st</sup> July 2020.

Dr. K. K. Cheralathan  
(Organizing Secretary)

Dr. A. Mary Saral  
(Convener & Dean, SAS)

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Technology**

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Accredited by NAAC

**National Conference on  
Structural, Architectural, Building and Automation in  
Sustainable Engineering-SABASE2020**

3 & 4 June, 2020

**CERTIFICATE**

This is to certify that

**N.MOORTHY**

Paavai Engineering College

has actively participated and presented a paper on

**“Experimental Investigation on Flexural Strength Behaviour of  
Reactive Powder Concrete”.**

**Organized by  
Department of Civil Engineering**

In Collaboration with



**MHRD'S  
INNOVATION CELL  
(GOVERNMENT OF INDIA)**



**INSTITUTION'S  
INNOVATION  
COUNCIL  
Ministry of HRD, Government of India**



**Association of Consulting  
Civil Engineers(India)**



**Engineering  
Council  
of India**

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(Dr.Chitra Manohar)



# Dr.N.G.P. Institute of Technology

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Dr. N.G.P, Kalapatti Road, Coimbatore-641 048.

## Department of Civil Engineering

### Certificate of Presentation

This is to certify that

**N. Moorthy**

has presented the paper titled " New Technique Construction Of Road Pavements in India For Permeable Pavements" in the National Level Web Conference on Recent Innovations and Advancements in Engineering & Technology (RIAET 2020) held during June 5-6, 2020 organised by the Department of Civil Engineering, Dr.N.G.P IT, Coimbatore.

**Dr.P.MUTHUPRIYA**  
CONVENOR, HOD/ CIVIL

**Dr.K.PORKUMARAN**  
PRINCIPAL





# SRM TRP ENGINEERING COLLEGE

SRM Nagar, Irungalur-621 105, Mannachanallur Taluk,  
Tiruchirappalli District, Tamilnadu



Virtual National Conference on Artificial Intelligence in  
Mechanical and Civil Engineering (NCAIMC-2020)

## Certificate

This is to certify that the following paper has been presented in the “Virtual National Conference on Artificial Intelligence in Mechanical and Civil Engineering” (NCAIMC-2020) held on 4<sup>th</sup> July 2020.

Title of the paper : **SPLICE CONNECTION USING RAILWAY STEEL TRUSS  
BRIDGES.**

Author : **Ms. S.GAYATHRI , ASSISTANT PROFESSOR  
PAAVAI ENGINEERING COLLEGE**

Mr.S. MANIMARAN  
Coordinators

Mr. K. SURESHRAJA  
Convener

Dr. B. GANESH BABU  
Principal



**SRM TRP ENGINEERING COLLEGE**

SRM Nagar, Irungalur-621 105, Mannachanallur Taluk,  
Tiruchirappalli District, Tamilnadu



**Virtual National Conference on Artificial Intelligence in  
Mechanical and Civil Engineering (NCAIMC-2020)**

## **Certificate**

**This is to certify that the following paper has been presented in the “Virtual National Conference on Artificial Intelligence in Mechanical and Civil Engineering” (NCAIMC-2020) held on 4<sup>th</sup> July 2020.**

**Title of the paper : SPLICE CONNECTION USING RAILWAY STEEL TRUSS  
BRIDGES.**

**Author : Mr. M. RAJKANNAN , ASSISTANT PROFESSOR  
PAAVAI ENGINEERING COLLEGE**

**Mr. S. MANIMARAN  
Coordinators**

**Mr. K. SURESHRAJA  
Convener**

**Dr. B. GANESH BABU  
Principal**