

Date: **MAY 01 ,2022**

Ref: ERS/HR/M/APPTO/355

**Mr. A.SANTHIYA  
D/O ANGAMUTHU  
5/426 INDIRA NAGAR  
87 KAVUNDAMPALAIYAM  
KUMARAMANGALAM,  
NAMAKKAL  
TAMIL NADU 637205**

**Appointment as Junior Trainee Detailer**

Dear **Mr. A.SANTHIYA**

This has reference to our offer of employment in **Eagle Rebar Engineering Services India Private Limited (ERS)**. We are pleased to appoint you as **Junior Trainee Detailer** with effect from **27-APR-2022**.

This offer of appointment is based on the information furnished in your application for employment. If, at any time, in future it comes to our notice that any of this information is incorrect or that any relevant information has been withheld, then **Eagle Rebar Engineering Services India Private Limited (ERS)** reserves the right to terminate your employment without notice.

Please note your designation / duties may be changed at the discretion of the Management. The terms and conditions of services applicable to you will be as follows:

**I. A. SALARY**

You will be placed with the **Annual CTC of 144000 /-**. Eagle Rebar Engineering Services India Private Limited (ERS) has specially designed your compensation that helps you to plan your needs comfortably and motivates you to consistently perform at high levels towards contributing both in meeting your personal life and as well as mission and the objectives of the organization.

**B. LOCATION & REPORTING**

Your current place of posting Location is, **Kumaramangalam, Namakkal, Tamil Nadu 637205**. You will be reporting to HR Desk on the Day of joining.

**II. PROBATION**

You will be on probation for six months from the date of joining. After the expiry of the probation period, it is the option of the management either to confirm your services or extend your probationary period and it is purely based on your performance.

**III. MEDICAL INSURANCE**

You will be entitled for Group Medical & Accidental Insurance Scheme as applicable.

**IV. TRANSFER**

The management reserves the right to transfer you to any location or any branch of the organization or to any other associates or subsidiaries with which the organization has or would have an arrangement of operation for providing services.

**V. CONFIDENTIALITY**

It is assumed, that you would not, except in the proper course of your duties, disclose or divulge to any person or persons whomsoever other than in connection with the business of Eagle Rebar Engineering Services India Private Limited (ERS), or yourself make use of any information of a secret or confidential nature acquired by you during the period of such employment relating to the trade or business of Eagle Rebar Engineering Services India Private Limited (ERS).

**VI. NON-COMPETING CLAUSE**

In addition to holding all confidential information as a member of our organization, you will not directly or indirectly engage in services with any of our competitors or start your own consultancy of similar nature during your tenure of employment or two years after leaving the company.

**VII. NON SOLICIT**

During the term of your employment with Eagle Rebar Engineering Services India Private Limited (ERS) and, after your term of employment you shall not solicit, endeavour to solicit, influence or attempt to influence any client, customer or other Person directly or indirectly direct his or its purchase of the product of Eagle Rebar Engineering Services India Private Limited (ERS) and/or services to himself or any person in competition with the business of Eagle Rebar Engineering Services India Private Limited (ERS).

**VIII. INDEMNIFICATION**

You agree to indemnify Eagle Rebar Engineering Services India Private Limited (ERS) for any losses or damages sustained by it which is caused by you or related to your breach of any of the provisions or obligations set out in this letter.

**IX. TERMINATION**

After confirmation, Eagle Rebar Engineering Services India Private Limited (ERS) can terminate your employment. You will have to give a notice or gross pay in lieu of the notice in case you leave the services of the company. Adjustment of privilege leave against notice period is purely at the discretion of the Management. Notice period will be (90-days)

**X. COOPERATION FOLLOWING TERMINATION**

You agree that, following notice of termination of your employment, you will cooperate fully with the company in all matters relating to the completion of his pending work on behalf of the company and the orderly transition of such work to such other employees as the Company may designate. You further agree that during and following the termination of his employment you shall cooperate fully with the company as to any and all claims, controversies, disputes or complaints over which you have any knowledge or that may relate to your employment relationship with the company. Such cooperation includes, but is not limited to, providing the company with all information known to you related to such claims, controversies, disputes or complaints and appearing and giving testimony in any forum.

**XI. GENERAL CONDITIONS**

- a. You will be required to observe the rules and regulations applicable to all employees of the company.
- b. You shall at all times, devote your full attention and skill to the affairs of the Company and will endeavor to your utmost ability to promote and advance the interests of the Company.
- c. During the term of your employment you are expected to adhere to the service conditions of the company that are in existence and framed by the company from time to time.
- d. Your employment is subject to your being medically fit as confirmed by a Registered Medical Practitioner.
- e. You are advised to visit our Eagle - Rebar Application frequently by using your credentials which has been provided by HR Dept. for practicing and following the laid down HR policies such as Leave Policy, Official News, Information from HR Desk, etc. for your access and benefit.
- f. You are required to abide by the rules and regulations under various regulatory and government authorities and amendments from time to time.
- g. You would devote the whole of your attention and abilities exclusively to the business of the company and shall in all respects obey and conform to the regulations from time to time issued by the company and applicable to you, shall at all times well and faithfully serve the company and use your best endeavors to promote the interest thereof.

**XII. JOINING**

As per our records, your date of Joining is **27-APR-2022**.

**XIII. ACCEPTANCE**

If the foregoing terms and conditions are acceptable to you, please confirm this in writing indicating your understanding and acceptance of the terms on duplicate copy of this letter, which should be signed by you and returned to us.

We take this opportunity to extend a warm welcome to Eagle Rebar Services.

Wish you a long and enjoyable career with Eagle Rebar Services!

Yours sincerely

For **Eagle Rebar Services**

For EAGLE REBAR ENGINEERING  
SERVICES INDIA PRIVATE LIMITED,

*E. J. J.*  
DIRECTOR

*S. S. S.*  
Sandhiya A

**Jegatheesh Eswaran**  
Management / Chief Executive Officer

**EAGLE REBAR**  
ENGINEERING SERVICES INDIA PRIVATE LIMITED

[www.eagle-rebar.com](http://www.eagle-rebar.com)



**C.R.I. PUMPS**

TRG/CRI/2022/MAY/009

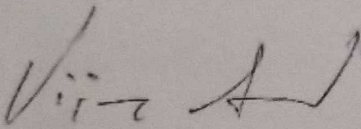
31.05.2022

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that Mr.Karthi.S (18ME18), student of B.E (Mechanical Engineering) from Sengunthar Engineering College, Tiruchengode had undergone his internship training in our organization from 07.04.2022 to 20.05.2022.

We wish him every success in future endeavours.

For C.R.I. Pumps Private Limited

  
Vijay Anand P

Associate Vice President – Human Resources

**C.R.I. PUMPS PRIVATE LIMITED**

Corporate Office

7/46-1, Keeranatham Road, Saravanampatti, Coimbatore - 641035. INDIA. CIN - U29120TZ1996PTC006902

GST : 33AAACC9497N1Z1, Phone : +91-422-7117000, 4597000, Fax : +91-422-7117005

E-Mail : corporateoffice@cripumps.com, Website : www.crigroups.com



C.R.I/. PUMPS

TRG/CRI/2022/MAY/013

31.05.2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr.MAHENDRAN.S (18ME25), student of B.E (Mechanical Engineering) from Sengunthar Engineering College, Tiruchengode had undergone his internship training in our organization from 04.03.2022 to 30.04.2022.

We wish him every success in future endeavours

For C.R.I. Pumps Private Limited

Vijay Anand P

Associate Vice President-Human Resources

**C.R.I PUMPS PRIVATE LIMITED**

Corporate Office

7/46-1. Keeranatham Road, saravanampatti, Coimbatore. 641035. INDIA. CIN - U29120TZ1996PTC006902  
GST : 33AAACC949NIZ1. Phone : +91-422-7317000. 4597000, Fax : +91-422.7117005  
E-Mail : corporateoffice@cnpurnpscom, Website wmq.crigroups.com

AN ISO 9001 COMPANY

pumping trust, worldwide.



C.R.I./ PUMPS

TRG/CRI/2022/MAY/013

31.05.2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr.MURALIKRISHNAN.T (18ME29), student of B.E (Mechanical Engineering) from Sengunthar Engineering College, Tiruchengode had undergone his internship training in our organization from 04.03.2022 to 30.04.2022.

We wish him every success in future endeavours.

For C.R.I.Pumps Private Limited

Vijay Anand P

Associate Vice President-Human Resources

**C.R.I PUMPS PRIVATE LIMITED**

Corporate Office

7/46-1, Keeranatham Road, saravenampatti, Coimbatore. 641035. INDIA. CIN - U29120TZ1996PTC006902

GST : 33AAACC949RNIZ1 Phone : +91-422-7317000, 4597000, Fax : +91-422 7117005

E-Mail : corporateoffice@cripumps.com, Website www.crigroups.com



**C.R.I. PUMPS**

TRG/CRI/2022/MAY/010

31.05.2022

**TO WHOMSOEVER IT MAY CONCERN**

This is to certify that Mr.Nisanth.P (18ME30), student of B.E (Mechanical Engineering) from Sengunthar Engineering College, Tiruchengode had undergone his internship training in our organization from 04.03.2022 to 25.05.2022.

We wish him every success in future endeavours.

For **C.R.I. Pumps Private Limited**

Vijay Anand P

Associate Vice President – Human Resources

**C.R.I. PUMPS PRIVATE LIMITED**

Corporate Office

7/46-1, Keeranatham Road, Saravanampatti, Coimbatore - 641035. INDIA. CIN - U29120TZ1996PTC006902

GST : 33AAACC9497N1Z1, Phone : +91-422-7117000, 4597000, Fax : +91-422-7117005

E-Mail : corporateoffice@cripumps.com, Website : www.crigroups.com



C.R.I./ PUMPS

TRG/CRI/2022/MAY/015

31.05.2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr.Poovarasana.R (18ME32), student of B.E (Mechanical Engineering) from Sengunthar Engineering College, Tiruchengode had undergone his internship training in our organization from 04.03.2022 to 30.04.2022.

We wish him every success in future endeavours

For C.R.I. Pumps Private Limited

Vijay Anand P

Associate Vice President-Human Resources

**C.R.I PUMPS PRIVATE LIMITED**

Corporate Office

7/46-1, Keeranatham Road, saravanampatti, Coimbatore. 641035. INDIA. CIN - U29120TZ1996PTC006902

GST : 33AAACC949NIZ1. Phone : +91-422-7317000. 4597000, Fax : +91-422.7117005

E-Mail : corporateoffice@cnpumps.com, Website [www.crigroups.com](http://www.crigroups.com)





C.R.I./ PUMPS

TRG/CRI/2022/MAY/007

31.05.2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr.PRANESH.R (18ME33), student of B.E (Mechanical Engineering) from Sengunthar Engineering College, Tiruchengode had undergone his internship training in our organization from 04.03.2022 to 30.04.2022.

We wish him every success in future endeavours

For C.R.I. Pumps Private Limited

Vijay Anand P

Associate Vice President-Human Resources

**C.R.I PUMPS PRIVATE LIMITED**

Corporate Office

7/46-1. Keeranatham Road, saravanampatti, Coimbatore. 641035. INDIA. CIN - U29120T21996PTC006902

GST : 33AAACC949rNIZ1. Phone : +91-422-7317000. 4597000, Fax : +91-422.7117005

E-Mail : corporateoffice@cnpumpscom, Website wmq.crigroups.com



C.R.I./ PUMPS

TRG/CRI/2022/MAY/016

31.05.2022

TO WHOMSOEVER IT MAY CONCERN

This is to certify that Mr.Ragavan.Y (18ME35), student of B.E (Mechanical Engineering) from Sengunthar Engineering College, Tiruchengode had undergone his internship training in our organization from 04.03.2022 to 30.04.2022.

We wish him every success in future endeavours

For C.R.I. Pumps Private Limited

Vijay Anand P

Associate Vice President-Human Resources

**C.R.I PUMPS PRIVATE LIMITED**

Corporate Office

7/46-1. Keeranatham Road, saravanampatti, Coimbatore. 641035. INDIA. CIN - U29120TZ1996PTC006902

GST : 33AAAACC949rNIZ1. Phone : +91-422-7317000. 4597000, Fax : +91-422.7117005

E-Mail : corporateoffice@cnpumpscom, Website wmq.crigroups.com

# TVS UPASANA LIMITED

(formerly Upasana Engineering Ltd)

G108/1 & G110, SIPCOT Industrial Park, Kothagondapalli

Village, Harita TK, Hosur, Krishnagiri Dt, Tamil Nadu India 635 109.

Phone: 91-44 - 6714 0800 E-mail: upasana@uel.in Website: <https://www.uel.in/>

Ref: TVS/HR/IT/20

Date: 13/05/2022

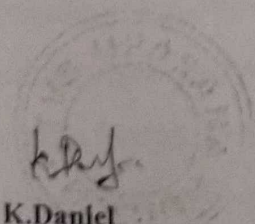
## INTERNSHIP TRAINING CERTIFICATE

This is to certify that **Mr. KARTHICK S, (Reg. No – 612318114019)**, a student of **B.E (Mechanical Engineering)** from **SENGUNTHAR ENGINEERING COLLEGE**, Tiruchengode, Namakkal District has Internship Training at our Plant from (31.03.2022 to 13.05.2022)

During This training his code and conduct were good.

We wish him every success in life.

Yours Faithfully  
For Tvs Upasana Ltd.,



**K. Daniel**  
Asst, Manager P&A  
Tvs Upasana Ltd



Ref: JBMAS / HR / IT/ 20

03.05.2022

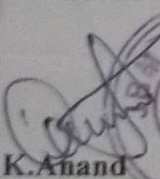
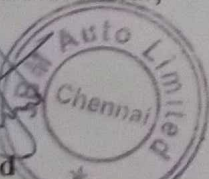
## INTERNSHIP TRAINING CERTIFICATE

This is to certify that Mr. SABESAN M S (Reg. No - 612318114039 ) a student of B.E  
(Mechanical Engineering) from SENGUNTHAR ENGINEERING COLLEGE,  
Thiruchengode, Namakkal District has done his Internship Training at our Plant from 17.03.2022  
to 03.05.2022

During this training his code and conduct were good.

We wish all the best for his future endeavors.

Yours Faithfully  
For JBM Auto Ltd.,

K. Anand  
Asst, Manager - P&A  
JBM Auto Limited



# CERTIFICATE OF COMPLETION

Presented to

**Prince Kumar**

For successfully completing a free online course  
**MySQL Basics in Hindi**

Provided by

**Great Learning Academy**

(On May 2022)

**V E R I F I E D**  
CERTIFICATE *of* COMPLETION

548389411513532582237

[premium.mysirg.com/learn/certificate/5483894-115135](https://premium.mysirg.com/learn/certificate/5483894-115135)



This is to certify that

**Prince Kumar**

has successfully completed 'C Language' during the period  
12-Jan-2022 to 6-Apr-2022

A handwritten signature in black ink, appearing to be "Saurabh Shukla", written over a horizontal line.

**Saurabh Shukla**

Instructor, Mysirg Education Services Pvt Ltd

# Certificate of Excellence

*This is to certify that*

**Md Sajid**

*Have Successfully completed & passed*

**Certificate course in Python**

*With* **A** *Grade in Examination Conducted in the Month of* **March 2022**

*Pride Educare is pleased to award her /him the recognition as*

**Pride Certified Expert in Python**

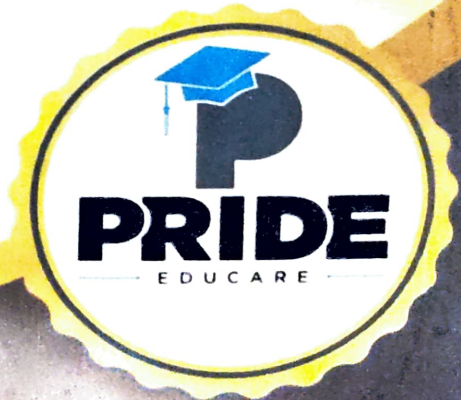
*In testimony whereof are set the seal and signature of the  
Managing Director & CEO, Pride Educare India Pvt.Ltd*



Managing Director & CEO,

Certificate Number : PRIDE000952

Pride Computer, Mumbai



# Certificate of Excellence

*This is to certify that*

**Md Sajid**

*Have Successfully completed & passed*

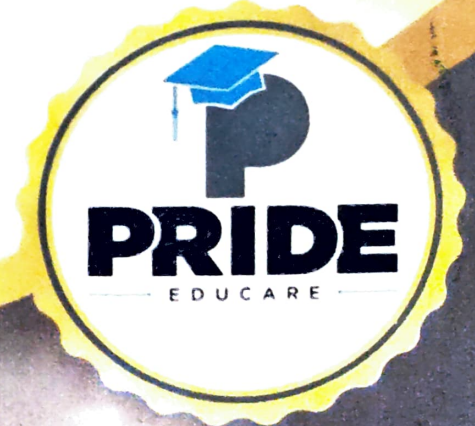
**Certificate course in C++ Programming**

*With* **A** *Grade in Examination Conducted in the Month of* **February 2022**

*Pride Educare is pleased to award her /him the recognition as*

**Pride Certified Expert in C++ Programming**

*In testimony whereof are set the seal and signature of the  
Managing Director & CEO, Pride Educare India Pvt.Ltd*



  
*Managing Director & CEO,*

Certificate Number : PRIDE000918

**Pride Computer, Mumbai**



# Certificate of Training

**Rahul Kumar Thakur**

from Sengunthar Engineering Collage has successfully completed a 4-week online training on **Internship & Job Preparation**. The training consisted of Getting Started with the Job Hunt, Building up your Gears, Going at the Front, and The Final Project modules.

In the final assessment, Rahul Kumar scored 58% marks.

We wish Rahul Kumar all the best for future endeavours.



**Sarvesh Agarwal**

FOUNDER & CEO, INTERNSHALA

Date of certification: 2022-04-27

Certificate no. : F9AE89ED-3CFB-AB12-0BEC-6D2BB71EE54A

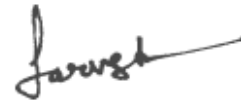
For certificate authentication, please visit [https://trainings.internshala.com/verify\\_certificate](https://trainings.internshala.com/verify_certificate)

# Certificate of Training

**Rahul Kumar Thakur**

from Sengunthar Engineering College has successfully completed an 8-week online training on **Web Development**. The training consisted of HTML, CSS, Bootstrap, DBMS, PHP, JS, React, and Final Project modules.

In the final assessment, Rahul Kumar scored 38% marks.  
We wish Rahul Kumar all the best for future endeavours.



**Sarvesh Agarwal**  
FOUNDER & CEO, INTERNSHALA

Date of certification: 2022-03-30      Certificate no. : 2823FBE2-2B92-A6E4-706C-780B2D4C72C6

For certificate authentication, please visit [https://trainings.internshala.com/verify\\_certificate](https://trainings.internshala.com/verify_certificate)



Estd: 2001

SENGUNTHAR

(Autonomous)

www.scteng.co.in



02.03.2022

Letter No. 1688 / SEC / Ind.Tra / BE / 2022

To

The Managing Director,  
The Salem Co-operative Sugar Mill,  
Mohanur,  
Namakkal.

Sir,

Sub: B.E. degree curriculum - compulsory industrial training - permission to undergo training at The Salem Co-operative Sugar Mill, Mohanur, Namakkal - requested - Reg.

We would like to bring to your kind reference that as per the Anna University, Chennai regulations to which our college is affiliated the students of the affiliated colleges have to undergo industrial training during every year of their study as a pre-requisite for the award of B.E. degree.

In this connection we are approaching your goodself for permission to undergo industrial training at your organization for the following student:

Sl.No.	Name	Roll. No	Year & Branch
1.	S.R.RITHICKUMAR	19EE006	III - EEE

The permission is to be given to do the In- Plant training during the period from 02.03.2022 to 08.03.2022.

Your co-operation is very much solicited and we earnestly hope that you may oblige for our request with your favourable orders.

Thanking you

Yours faithfully,



*K. Umadevi*  
2/3/2022  
PRINCIPAL  
SENGUNTHAR ENGINEERING COLLEGE  
(AUTONOMOUS)  
TIRUCHENGODE - 637 205

From,

S.R. RITHICKUMAR,  
 B.E III<sup>rd</sup> - Year (EEE),  
 Sengunthar Engineering College,  
 Tiruchengode.

To,

The Managing Director,  
 The Salem Co-operative Sugar mill,  
 Mohanur,  
 Namakkal - 637015

Respected Sir,

Sub: Permission to Undergo Inplant  
 training requested - Reg

I would like to apply Inplant training  
 in your organization. This training is very  
 useful for my studies. So give permission  
 to undergo industrial training at your's  
 organization. My paternal father also working  
 in your's mill [A. Selvam, Employee No. 63466,  
 Mechanic section]

Thanking you

Place: Mohanur

Date: 02.03.2021

Yours faithfully

S. Rithickumar



# The Salem Co-operative Sugar Mills Ltd., Mohanur - 637 015,

Rc.No.2849 / C 3 / Inplant / 2005

Namakkal Dist, Tamil Nadu

Dated: 05-03-2022.

To

The Principal,  
Sengunthar Engineering College(Autonomous),  
Kosavampalayam, Kumaramangalam(Po),  
Tiruchengode - 637 205.

Sir,

Sub: Salem CSM, Mohanur - Permission for Industrial Training - Regarding.  
Ref: Your letter Ref. No . 1688/SEC/Ind.tra/BE/2022 dated 02-03-2022.

As requested in your letter cited, permission is accorded to the following students of your college to take INDUSTRIAL TRAINING in our mills on the following terms and conditions.

1. Name of the Students:

S.No.	Name	Course
1	S.R.RITHICKUMAR	III B.E., (EEE)

2. Period of Internship Training permitted : 10-03-2022 to 20-03-2022.  
3. Training/Guiding Officer at our Mills : Dy. CE.,

**TERMS AND CONDITIONS:**

1. No Boarding and Lodging facilities will be provided to the student(s) during the period of In Training.
2. The Project work will be done at the own risk and responsibility of the student(s).
3. If any damage or loss caused to the mills property during by the student during the period of Project work, the respective student(s) will be held responsible for the same.
4. Stipend WILL NOT BE PAID to the student(s) during the period of Project work.
5. The project to study results must be utilized only for the academic purpose.
6. The student is permitted to under go project work in the topic in our Mills.
7. The final project report must be prepared only on the approval of the Management of this mill.
8. The student(s) should sign in the Attendance Register Morning at 9.30 AM being maintained by the Guiding Officer.

/By Order/

For The Salem Co-operative Sugar Mills Ltd.,

for Managing Director.

Copy to: Dy.CE.,/Security Office/Time Office





*The Salem Co-operative Sugar Mills Ltd.,*

**AN ISO 9001 : 2015 QMS CERTIFIED SUGAR MILLS**

**MOHANUR - 637 015, Namakkal District, Tamil Nadu.**



GSTIN : 33AAAAT3144R1Z8

ISO 9001 : 2015  
Reg. No. 663369

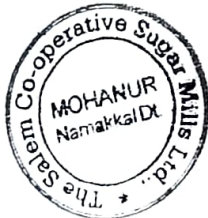
Rc.No.2849/C3/Inplant/2005.

Dated: 22-03-2022.

**CERTIFICATE**

This is to certify that **Mr. S.R.RITHICKUMAR, III B.E., (EEE), (Roll No: 19EE006)** student of **Sengunthar Engineering College (Autonomous), Kosavampalayam, Kumaramangalam (Po), Tiruchengode - 637 205** has undergone **Industrial Training in The Salem Co-operative Sugar Mills Ltd., Mohanur - 637 015, Namakkal (DT) during the period from 10-03-2022 to 19-03-2022.**

**for The Salem Co-op. Sugar Mills Ltd.,**



*R. J. S.*  
**for Managing Director.**

Phone: STD: 04286 - 255221, 255224 Mohanur.

E mail ID : sacos07 @ yahoo.co.in

Fax: 04286 - 255264

# CERTIFICATE

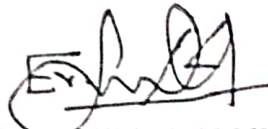
## OF ACHIEVEMENT

THIS CERTIFICATE IS AWARDED TO

BHARANI. S. K.

The purpose of this letter is to certify that He has attended an internship in Home automation and Industrial Automation, App Development, and Technical workshops(IoT Projects). In the period between 19/05/2022 and 23/09/2022 the process was guided by Er. S. Vinoth Kumar.

We appreciate the keen interest shown by the student in this training and wish him to achieve more in the future and bring laurels to our country. During the period of his internship with us, he had been exposed to different processes and was found diligent, hardworking, and inquisitive. We wish him every success in his life and career.



**Er. S. VINOTH KUMAR**

**Managing Director**

**Veerana Projects 24X7**

**(Engineering Future)**

**Kumaramangalam (P.O.)**

**Tiruchengode-Tk. Namakkal-Dt.**

**Cell: 96985 19096.**

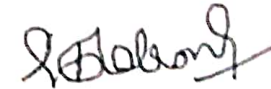


**VEERANA PROJECTS 24\*7**

**UAM.NO:TN14D0022138**

*Since 2015*

*Engineering in Future*



**Mr. S. KUMARESAN**

**CEO**

<https://veerana-projects.business.site>

# CERTIFICATE

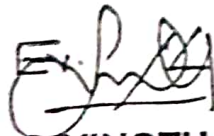
## OF ACHIEVEMENT

THIS CERTIFICATE IS AWARDED TO

VENKATESH . R

The purpose of this letter is to certify that He has attended an internship in Home automation and Industrial Automation, App Development, and Technical workshops(IoT Projects). In the period between 19/05/2022 and 23/09/2022 the process was guided by Er. S. Vinoth Kumar.

We appreciate the keen interest shown by the student in this training and wish him to achieve more in the future and bring laurels to our country. During the period of his internship with us, he had been exposed to different processes and was found diligent, hardworking, and inquisitive. We wish him every success in his life and career.



Er. S. VINOOTH KUMAR

Managing Director

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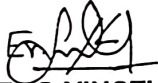
# CERTIFICATE

OF ACHIEVEMENT  
THIS CERTIFICATE IS AWARDED TO

PRASANTH . K

The purpose of this letter is to certify that He has attended an internship in Home automation and Industrial Automation, App Development, and Technical workshops (IoT Projects). In the period between 9/05/2022 and 23/09/2022 the process was guided by Er. S. Vinoth Kumar.

We appreciate the keen interest shown by the student in this training and wish him to achieve more in the future and bring laurels to our country. During the period of his internship with us, he had been exposed to different processes and was found diligent, hardworking, and inquisitive. We wish him every success in his life and career.



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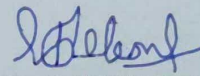


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## Hybridized Wrapper Filter Using Deep Neural Network for Intrusion Detection

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**Abstract:** Huge data over the cloud computing and big data are processed over the network. The data may be stored, send, altered and communicated over the network between the source and destination. Once data send by source to destination, before reaching the destination data may be attacked by any intruders over the network. The network has numerous routers and devices to connect to internet. Intruders may attack any were in the network and breaks the original data, secrets. Detection of attack in the network became interesting task for many researchers. There are many intrusion detection feature selection algorithm has been suggested which lags on performance and accuracy. In our article we propose new IDS feature selection algorithm with higher accuracy and performance in detecting the intruders. The combination of wrapper filtering method using Pearson correlation with recursion function is used to eliminate the unwanted features. This feature extraction process clearly extracts the attacked data. Then the deep neural network is used for detecting intruders attack over the data in the network. This hybrid machine learning algorithm in feature extraction process helps to find attacked information using recursive function. Performance of proposed method is compared with existing solution. The traditional feature selection in IDS such as differential equation (DE), Gain ratio (GR), symmetrical uncertainty (SU) and artificial bee colony (ABC) has less accuracy than proposed PCRFE. The experimented results are shown that our proposed PCRFE-CDNN gives 99% of accuracy in IDS feature selection process and 98% in sensitivity.

**Keywords:** Deep neural network; intrusion detection; machine learning

### 1 Introduction

Nowadays Computer networks, wireless networks are widely used by variety of applications which are prone to myriad of security threats and attacks. The security challenges that have to be solved originate from the open nature, the flexibility and the mobility of the wireless communication medium [1,2]. In an effort to secure these networks, various preventive and protective mechanisms such as intrusion detection systems (IDS) were developed [3]. Primarily, IDS can be classified as: host based intrusion detection systems (HIDS) and network based intrusion detection systems (NIDS) [4]. Furthermore, both HIDS and NIDS can be categorized into: signature-based IDS, anomaly-based IDS and hybrid IDS [5,6]. An Anomaly



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## Optimized Neural Network-Based Micro Strip Patch Antenna Design for Radar Application

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Received: 25 December 2021; Accepted: 01 March 2022

**Abstract:** Microstrip antennas are low-profile antennas that are utilized in wireless communication systems. In recent years, communication engineers have been increasingly interested in it. Because of downsizing, novelty, and cost reduction, the number of wireless standards has expanded in recent years. Wideband technologies have evolved in addition to analog and digital services. Radars necessitate antenna subsystems that are low-profile and lightweight. Microstrip antennas have these qualities and are suited for radars as an alternative to the bulky and heavyweight reflector/slotted waveguide array antennas. A perforated corner single-line fed microstrip antenna is designed here. When compared to the basic square microstrip antenna, this antenna has better specifications. Because key issue is determining the best values for various antenna parameters when developing the patch antenna. Optimized Neural Network (ONN) is one potential technique utilized to solve this issue, and this work also uses Particle Swarm Optimization (PSO) to enhance the antenna performance. Return loss (S11) and Voltage Standing Wave Ratio (VSWR) parameters are considered in all situations, developed with Advanced Design System (ADS) applications. The transmitters are made to emit in the Ku-band, which covers a wide range of wavelengths. From 5–15 GHz, it is used in most current radars. The ADS suite is used to create the simulation design.

**Keywords:** Optimized neural network; particle swarm optimization; patch antenna; c-band; return losses

### 1 Introduction

Wireless communication has been progressively evolving in recent years, including revolutionary antenna technology demands. The antenna structure is a critical component of many wireless communication systems, including wireless Local Area Network (WLAN), Wireless Fidelity (WIFI), mobile phones, traffic radar, Global Positioning System (GPS), military, biomedical, and aerospace applications. Patch antennas arrays provide many advantages, including small dimensions, low density, low cost, high throughput, adaptability with horizontal or semi media, rapid manufacture, and connection



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# Design and experimental investigation on VL-MLI intended for half height (H-H) method to improve power quality using modified particle swarm optimization (MPSO) algorithm

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**Abstract.** A Voltage lift performance is an excellent role to DC/DC conversion topology. The Voltage Lift Multilevel Inverter (VL-MLI) topology is suggested with minimal number of components compared to the conventional multilevel inverter (MLI). In this method, the Modified Particle Swarm Optimization (MPSO) conveys a primary task for the VL-MLI using Half Height (H-H) method, it determine the required optimum switching angles to eliminate desired value of harmonics. The simulation circuit for fifteen level output uses single switch voltage-lift inverter fed with resistive and inductive loads (R & L load). The power quality is developed by voltage-lift multilevel inverter with minimized harmonics under the various Modulation Index (MI) while varied from 0.1 up to 1. The circuit is designed in a Field Programmable Gate Array (FPGA), which includes the MPSO rules for fast convergence to reduce the lower order harmonics and finds the best optimum switching angle values. To report this problem the H-H has implemented with MPSO to reduce minimum Total Harmonic Distortion (THD) for simulation circuit using Proteus 7.7 simulink tool. Due to the absence of multiple switches, filter and inductor element exposes for novelty of the proposed system. The comparative analysis has been carried-out with existing optimization and modulation methods.

**Keywords:** Solar-Photovoltaic, voltage lift-multilevel inverter, particle swarm optimization algorithm, half height, field program gate array

## 1. Introduction

The electrical system has major problems due to the presence of harmonic contents in the power quality features. The harmonics may be classified into

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# Congestion management in deregulated power system by series facts device using heuristic optimization algorithms

**Article type:** Research Article

**Authors:** [George, Sophia Jasmine](https://content.iospress.com/443/search?q=author%3A%28%22George.Sophia.Jasmine%22%29) (https://content.iospress.com/443/search?q=author%3A%28%22George.Sophia.Jasmine%22%29)<sup>a</sup>; | [Ramaraju, Satish Kumar](https://content.iospress.com/443/search?q=author%3A%28%22Ramaraju.Satish.Kumar%22%29) (https://content.iospress.com/443/search?q=author%3A%28%22Ramaraju.Satish.Kumar%22%29)<sup>b</sup>; | [Venkataraman, Vanitha](https://content.iospress.com/443/search?q=author%3A%28%22Venkataraman.Vanitha%22%29) (https://content.iospress.com/443/search?q=author%3A%28%22Venkataraman.Vanitha%22%29)<sup>c</sup>; | [Kaliannan, Thenmalar](https://content.iospress.com/443/search?q=author%3A%28%22Kaliannan.Thenmalar%22%29) (https://content.iospress.com/443/search?q=author%3A%28%22Kaliannan.Thenmalar%22%29)<sup>d</sup>; | [Kumaravel, Umadevi](https://content.iospress.com/443/search?q=author%3A%28%22Kumaravel.Umadevi%22%29) (https://content.iospress.com/443/search?q=author%3A%28%22Kumaravel.Umadevi%22%29)<sup>e</sup>; | [Veerasundaram, M.](https://content.iospress.com/443/search?q=author%3A%28%22Veerasundaram.M.%22%29) (https://content.iospress.com/443/search?q=author%3A%28%22Veerasundaram.M.%22%29)<sup>f</sup>

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**Abstract:** Conventionally in many countries, electrical power industry is organized as vertically integrated system. Under this system, large utilities are authoritative for the generation, transmission and distribution of electrical power. Such utilities are governed by the rules and regulations of the government and are forced to operate within the prescribed guidelines with minimal profit. This confirmation causes an ineffective and sluggish perspective in power industry with a lack of technical innovation, competent management and customer satisfaction. To overcome these deficiencies, power sector around the globe is getting restructured. This paper addresses an inevitable technical disputes occurring in deregulated environment i.e., transmission congestion which has an adverse effect on system security, increase in electricity pricing and line losses. Flexible AC Transmission System (FACTS) is a boon to the power sector which helps in a better and reliable power flow through the transmission lines. The problem is articulated as a multi objective function satisfying all the operational and security limits. Three heuristic algorithms namely Particle Swarm Optimization (PSO), Symbiotic Organism Search (SOS) and hybrid Quantum based PSO-Bio-geography based krill herd optimization (Q-PSOBBKH) algorithms were applied in finding solution to this complex congestion problem. To study the effectiveness of the proposed objective, IEEE 14 bus system was considered as the test system. In order to validate the proposed methodology three congestion cases i.e. bilateral transaction, multilateral transaction and overloading were imposed on the test bus system. Simulation was carried out in MATLAB.

**Keywords:** Deregulated power system, particle swarm optimization, symbiotic organism search algorithm, hybrid quantum based PSO, bio-geography based Krill Herd Algorithm

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**Journal:** [Journal of Intelligent & Fuzzy Systems](https://content.iospress.com/443/journals/journal-of-intelligent-and-fuzzy-systems) (https://content.iospress.com/443/journals/journal-of-intelligent-and-fuzzy-systems), vol. 42, no. 6, pp. 6195-6208, 2022

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## IOT based Water Quality Monitoring System with Chloro Neutraliser

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### ABSTRACT

Water is a necessary component for humanity's survival. Because of its numerous applications, it is always in high demand. Large reservoirs of water, such as lakes, streams, and the ocean itself, provide the majority of the water supply. As a result, it's a good idea to keep an eye on things to confirm that it is fit for human consumption. Water quality monitoring is now done in traditional labs, which is time intensive and prone to errors. As a result, the goal of this article is to see if an Arduino-based sensor system for water quality monitoring is feasible. Weekly onsite tests at several daily locations were conducted using a simple prototype consisting of a microcontroller and multiple attached sensors. The system was discovered to be reliable, however it is reliant on human intervention and disposed to data mistakes. The system, on the other hand, lays a solid foundation for future growth activities in the same category, elevating the system to a higher level in Internet of Things (IoT) compatibility.

**Keywords:** Arduino UNO R3 board, Inline pH probe Sensor, Mineral Cartridge, Notification System, Smart Home.





# Performance Evaluation of speed control using Fuzzy dependent Genetic Algorithm in PMSM

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**Abstract.** This paper examines the role of the tuning algorithm for speed regulation of the Permanent Magnet Synchronous Motor (PMSM). The picks of the PID regulator normally provide adequate results in the application of a low-force drive, but for high-power application drives, a self PID controller doesn't provide any acceptable performance. Such applications require high-precision, superior and adaptable speed regulators and effectiveness in the cycle and execution of the plan. High-performance applications need some capacity based on High-speed high-reliability regulators, adaptability with maximum torque coefficient, higher rating capacity with minimum ripple torque. So many speed controlling mechanisms are available in the quick world, and these methods vary from the choice of regulator used in the PMSM to the method of programming/use of equipment. In this paper, generous examination is taken to control the speed of PMSM with three unique specialists, ABC based speed control drive, ANFIS controller of PMSM drive and Genetic algorithm based fuzzy controller. The planned regulators are tried through the mathematical reproductions in the MATLAB Simulink Platform. The examination between the reproduction aftereffects of execution measures are introduced toward the end. Hereditary calculation based Genetic algorithm based fuzzy controller gives some better outcome appropriate for the superior applications.

**Keywords:** Artificial bee colony; ANFIS; Fuzzy Controller; PID controller; Genetic Algorithm; PMSM, Speed regulation.

## 1. INTRODUCTION.

The development of attractive materials and power electronics devices has rendered the PMSM drive extremely important in various control applications. The PMSM motor is inherently an asynchronous motor where the field is energized by a durable magnet and a sinusoidal EMF. These motors are sufficient to make torque, near to zero rpm by the usage of permanent magnets. For the comparable force produced by induction motors, they have a more manageable packaging size. This makes PMSM machines successful in all types of special operations (e.g., Electrical vehicles and hybrid electrical vehicles, CNC machines, industry robots, ventilating and air conditioning applications). Nevertheless, PMSM sensitivity is highly susceptible to disturbances of external loads and parametric uncertainties in the system. Some



## Design and Analysis of six DOF Robotic Manipulator

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**Abstract.** The robotic manipulators are nowadays used for many applications in the industries. This project involves the design and analysis of a six DOF manipulator for welding, pick and place application. We developed a robot in SolidWorks and analysed its motion, load withstanding capacity and path traceability. However, design and analysis of a robot involves modelling of its forward and inverse kinematics. We modelled the forward and inverse kinematics by D-H parameters. The proposed model makes it possible to control the manipulator to achieve any reachable position and orientation in an unstructured environment. The inverse kinematics provided many possible combinations of angles for a single end effector position. A GUI was created in MATLAB for studying the forward and inverse kinematics of the robot. It gave results with precision of 0.2 cm. The load analysis also gave the maximum load it can withstand 200 KN without permanent deformation. The approach presented in this work can also be applicable to solve the kinematics problem of other similar kinds of robot manipulators.

**Keywords.** Robot, Manipulator, MATLAB, kinematics, position.

### 1. Introduction

Nowadays robots are used in many areas like Industries, Hospitals, Warehouse, Harbours, etc., When it comes to industries mainly robotic manipulators are used extensively. Because it can carry heavy payloads and do work more faster and smarter than humans. These manipulators are introduced into the industries for increasing the productivity and quality of products in a greater extent. The modern commercial robotic systems are very complex. They are integrated with many sensors and actuators which, have many interacting DOF and most of them require user interfaces and programming tools. When it comes to designing a robotic arm first we have to design the mechanical structure and model its kinematics. While modelling the forward and inverse kinematics of a 5 DOF manipulator the singular problem was discussed after the forward kinematics is provided. For any given reachable position and orientation of the end-effector, the derived inverse kinematics will provide an accurate solution [11]. But inverse kinematics gave many possible positions and it was complex to solve as DOF increases.

The inverse kinematics solution of general SN (cylindrical robot with dome), CS (cylindrical robot), NR (articulated robot) and CC (selectively compliant assembly robot arm-SCARA, Type 2) robot manipulator belonging to each group mentioned above were provided as examples [8]. The inverse kinematics of the P2Arm, which makes it possible to control the arm to any reachable position in an unstructured environment. The strategies developed here could also be useful for solving the inverse





# Lung Cancer Prediction Using Machine Learning Technique Over Big Data

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## Abstract

In current position, cancer disease is substantial menace to human life globally. 32 percent of people worldwide are affected by various types of cancer. But lung cancer depicts the highest ratio. Nowadays peoples are not having awareness about to detect the cancer in early stage. The survival rate of five year for lung cancer disease is 55 percent of the cases are affected most. However, only 14 percent of lung tumor cases are diagnosed at an early stage. For slight tumors the five-year survival rate is simply 3 percent. There are 4 stages in lung cancer. If we predict the disease in I and II stage, it is easy to cure by effortless operations. If it exceeds second stage, it may not be cured. So, diagnosing the cancer in earlier stage is the best solution to predict the patients from death. For that, the system uses the Decision Tree and K-Nearest Neighbor (KNN) Algorithms as preferred classification model. By using these algorithms, it becomes easier to diagnose the cancer in early stage. So, the survival rate of lung cancer patients becomes higher. The propound system analyze, calculate and compares the precision of Random forest, Naive Bayes and KNN and the preliminary result reveals that ID3 furnish better precision for cancer dataset. The input has been accessed only in numeric format. The algorithms also maintain key stuffs of the dataset, which are predominant for extracting performance, and so it may warrant the correct defense and effective preservation. This leads to protection of any extracting works that depends on the sequence of distances between objects, such as Random forest, Naive Bayes -search and classification, as well as many visualization techniques. In particular, it establishes a restricted isometric property, that is the tight leap on the shrinkage and enlargement of the original distances.

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**Key Words:** Lung cancer, Decision Tree, KNN, ID3, Naïve Bayes

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**NeuroQuantology 2022; 20(8):910-917**

## Introduction

Big data is a term which is used to manage and analyze the large quantity of data which is not able to deal by the traditional software systems. Every day there is billions of data are generated from various factors such as e-commerce websites, social media, hospitals etc. Big data plays an important role

to analyze these data with more effectiveness and provides the best result. Big data techniques are used to work with the effective performance of surgery strategies, other medical tests, and also to discover the relationships among very rushed medical, clinical and diagnosis data. In the field of health sector, the facility for doctors had introduced various data chassis with an enormous amount of

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# *Artificial Intelligence based Chat Bot for Patient Health Care*

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**Abstract— India is a country with an increasing population of more than 1.3 billion yet lack of medication is a crisis here. While travelling around government hospitals and as well as public hospitals, it is discovered that there are insufficient numbers of doctors to handle the growing population, where lack of sufficient doctors are the one of the reasons for patient deaths. To overcome these issues, we set to create a medical chatbot using Artificial Intelligence, which has the potential to provide an immediate access about any medical information-based queries. These chatbots helps the patient to discover the nearby specialists and fixing their appointments. If the user is suffering from severe fever by asking few questions in series the chatbot provides the precautions based on the users' answers or it will suggest any specialists nearby according to the timeline of both user and specialist. In case if the user is searching for any diagnosis centre, for example if he/she needs any MRI scan the chatbot provides the information of labs in surroundings along with the opening and closing times. The design of the software is done through the combination of NLP and Machine Learning.**

Keywords — Natural Language Processing, Artificial Intelligence, Decision Tree, Dimensionality Reduction, Feature Selection, Feature Extraction.

## I. INTRODUCTION

After the ascent of the web and portable applications, virtual chatbot applications are the most recent developments of computerized plan. These applications are notable for programmed conversational specialists that sudden spike in demand for PC programming or a sort of computerized reasoning Artificial Intelligence (AI) communication between the clients and machines with the intervention of Natural Language Processing (NLP). Chat bots are

conceivably alluded to as the most encouraging and progressed type of human-machine connections. In the long run, these virtual specialists are engaging in the fundamental worldwide areas like medical services, banking, instruction, agribusiness, and so forth. The medical services area is firmly connected with human communication, and it appears to be strange. The utilization of chat bots has spread from client assistance to immeasurably significant issues. Chat bots are entering the medical services industry and can assist with tackling a large number of its issues. Well, being visit bots is to speak with clients. It permits clients to ask clinical inquiries and get replies from specialists. The clinical chat bots assist the clients with presenting their concern about the wellbeing. The client can ask any close to home question identified with medical care through the chat bots without truly accessible to the clinic. Inquiry is shipped off chat bots and gets related responses to the customers. A major sickness can begin from little issues, for example, migraine which feels ordinary however it very well might be the start of large infection like dengue and the greater part of the illness can be recognized by normal indications so the sickness can be anticipated. Wellbeing Service Provider that gives conferences specialists and medical care.

## II. LITERATURE SURVEY

A chatbot based medical system [1] has developed a chat bot based medical system based on three phases. The first phase is the pre-processing stage, which incorporates (NLP) Natural language processing methods such as word splitting, punctuation filtering, stop word removal, and porter stemming to find the root word. Aspect extraction and aspect mapping are carried out in the second phase of modelling. In phase 2, the detected topics and aspects are mapped together, and each categorized dataset is assigned to an SVM with machine learning. The trained algorithm recognizes the problem typed by the person in the medical chat bot in the third step, and these problems are linked with data base sets. A Medical chat bot is used to check the state health of the person at anytime [2], anywhere same like

## Superparamagnetic Iron Oxide Nanoparticles Synthesis by Carrier Oils Stabilization

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### ABSTRACT

This work presents the synthesis, characterization, and implication of magnetic nanoparticles in identifying the antibiotic sensitivity on gram positive bacteria with different fatty acids stabilized nanoparticles. The iron oxide nanoparticles were combined utilizing co-precipitation technique and balanced out in different biosurfactants, for example, flaxseed oil, almond oil and olive oil. These nanoparticles were characterized by X-ray diffraction method, FTIR analysis, particle size analyzer and Transmission Electron Microscopy. Structure of initial magnetite nanoparticles synthesized was confirmed by XRD analysis and the estimation of nanoparticles size with the value of 50 -100 nm and it was confirmed with TEM. The attachment of functional groups of oils was predicted using FTIR spectroscopy. Studies indicate that olive oil and almond oil stabilized iron oxide nanoparticles show effective antibacterial activity toward the gram- positive bacterium bacillus cereus compared to flaxseed oil. The results suggest that iron oxide NPs with surface coatings could potentially be used as an effective antibacterial agent.

**Keywords--** Antibacterial, Biomedical, Nanoparticles, Spectroscopy, XRD

### INTRODUCTION

The nanotechnology has uncovered a wide scope of biomedical applications with different methodologies by thinking about the requirements of greener bioprocesses and novel

enhancers for blend utilizing microbial cycles, biosurfactants, and additionally biosurfactant creating organisms are arising as a substitute hotspot for the quick union of nanoparticles. It is an option greener way to deal with lessen the expenses without forfeiting an excessive amount of value. Biosurfactants are regular surfactants got from microbial beginning made for the most part out of sugar and unsaturated fat [1]. They have higher biodegradability, lower harmfulness, and superb natural exercises. The biosurfactant interceded measure and microbial amalgamation of nanoparticles are presently arising as spotless, nontoxic, and ecologically satisfactory "green science" techniques. The biosurfactant-interceded amalgamation is better than the techniques for bacterial-or parasitic intervened nanoparticle blend, since biosurfactants lessen the development of totals because of the electrostatic powers of fascination and work with a uniform morphology of the nanoparticles. In this audit, we feature the biosurfactant intervened amalgamation of nanoparticles with significant subtleties including a greener bioprocess, wellsprings of biosurfactants, and natural integrated nanoparticles dependent on the accessible writing and lab discoveries [2, 3].

Magnetic iron oxide nanoparticles (MION) have been used in various fields owing to their unique properties including large specific surface area and simple separation with magnetic fields. MIONs present many potential possibilities in biomedicine. Also, the interest in the potential application of the magnetic technique and in food related applications such as enzyme immobilization, protein purification, and food analysis in pharmacy is notably growing [4]. It is currently being recognized that